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SOLANUM CAROLINENSE (*Linnê*).

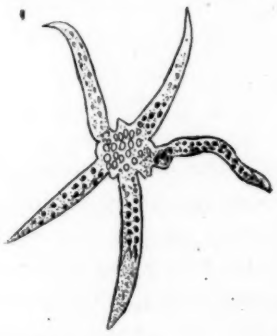
By G. A. Krauss, Ph.G.

Read before the Philadelphia College of Pharmacy at the Pharmaceutical Meeting, January 20.

II. THE LEAVES.[1]

The leaves are broadly oblong, sinuate-serrate, and their mibrid is beset with from 6 to 10 prickles of about 3 mm. length. The microscopical examination revealed a beautiful appearance due to numerous stellate hairs or scurfs upon both surfaces, and approximately estimated at from 800 to 1,500 on each leaf.

For analysis the leaves were collected by the author, near Memphis, during the month of September, and reduced to the requisite fineness of powder:



	Per Cent.	
Petroleum ether extract:		
Volatile oil,	0·014	
Fixed oil and chlorophyll,	1·708	
		1·722
Ether extract:		
Soluble in water; containing alkaloid,	0·060	
Soluble in alcohol; resin, chlorophyll,	1.040	
Soluble in ether; resin,	0·338	
		1·438
Alcohol extract:		
Soluble in water; KCl and solanine,	2·930	
Soluble in ether; chlorophyll and resin,	0·420	
Loss,	0·110	
		3·460

[1] For analysis of the root bark, see this Journal, December, 1890, p. 602.

	Per Cent.		
Aqueous extract,	11·540		
Containing ash,	6·850		
Mucilage,	3·140		
Containing ash,	2·540		
Net mucilage,		0·600	
Dextrin, etc.,	4·320		
Containing ash,	2·380		
Net dextrin,		1·940	
Glucose,		0·172	
Albumen,		0·900	
Undetermined,		1·078	
Total extract, less ash,			4·690
Caustic soda extract,	5·078		
Containing ash,	1·884		
Albuminoids,	1·530		
Containing ash,	0·230		
		1·300	
Undetermined,		1·894	
Total extract, less ash,			3·194
Hydrochloric acid extract,	6·558		
Containing ash,	3·192		
Pararabin,		2·374	
Albuminous substances,		0·992	
Total extract, less ash,			3·366
Incrusting matter and cellulose,		47·326	
Ash and silica,		26·700	
Moisture,		8·160	
			100·056

A glance at this analytical table shows the large amount of ashes taken from the soil, carried into the leaves and there deposited. In Emil Wolff's *Aschen-Analysen*, I, p. 73, the largest amount of crude ash from a solanaceous plant is reported as 22·84 per cent. While exhausting 500 gm. of powdered leaves with alcohol, for the extraction of alkaloids, I separated nearly 2 gm. of well defined crystals, which, after examination, proved to be chloride of potassium. The specimen before you represents the greater part of this KCl extracted from the leaves by commercial alcohol.

The aqueous extract contained over 50 per cent. of mineral matter and had a strong acid reaction, which was not due to a vege-

table acid, as an experiment with acetate of lead proved, but it was due to a free mineral acid. The ash of the mucilage precipitate consisted largely of calcium phosphate, also the ash of the dextrin precipitate, but this contained likewise much chloride and sulphate of potassium. The ash of the caustic soda extract contained phosphoric acid, no lime and it would appear as if the free mineral acid was phosphoric acid. The cellulose finally contained 10·60 per cent. of silica and insoluble matter.

A quantitative analysis of the ashes of the leaves was made, and showed the presence of 3·55 per cent. KCl, K_2SO_4 and KOH; 3·67 per cent. of Ca; 2·22 per cent. of P_2O_5. Iron was not present.

No alkaloids could be found in the petroleum ether extract.

The ether extract contained a small amount of an alkaloid, which seemed to be solanidine. It is present in such small quantities that the amount obtained from 500 gm. of the leaves was insufficient for further experiments. It did not reduce Fehling's solution.

The alkaloid extracted by alcohol was identified as solanine by the following reactions: It reduces Fehling's solution after having been boiled with an acid; its salts gelatinize when evaporated over H_2SO_4; $HgCl_2$ throws down a white flocculent precipitate; Mayer's solution gives a similar precipitate, and $AuCl_3$ causes a yellow precipitate, with gradual reduction of metallic gold.

Five hundred gm. were used for the extraction of solanine, but only 0·2 gm. of a fairly pure product could be obtained.

Starch was not present in the leaves.

In concluding, I would say that water extracts the alkaloid. This is contrary to the statements of other investigators on solanine in other plants, but in this case it is due to the presence of the free mineral acid referred to.

LABORATORY, MANSFIELD DRUG CO.,
MEMPHIS, TENN., January 16, 1891.

NOTES ON VEGETABLE DRUGS USED IN MEXICO.

BY JOHN M. MAISCH.

[*Continued from p. 8.*]

Anacardiaceæ.—Schinus Molle, *Linné.* Professor S. Pérez has analyzed the fruit (La Farmacia, I, p. 1) with the following results: Glucose, acrid and bitter resin-acid, volatile oil, tannin, leptin (?), etc.

Mangifera indica, Linné. The flowers are used in the form of infusion for catarrh of the bladder, and in fumigations for driving off flies.

Aristolochiaceæ.—Aristolochia microphylla, *Willd.*, yields *yerba* and *raíz del indio.* The root is top-shaped and somewhat cylindrical, yellowish gray, annulate and irregularly wrinkled; the bark rather thick, compact and yellowish-white, the meditullium radiating and porous from the large ducts; odor camphoraceous and mintlike; taste aromatic and bitter. The leaves are roundish-reniform, obtuse, entire, five-nerved, pubescent, and about 1·5 cm. long and broad. The leaves are reputed to be vulnerary, and the root is credited with properties analogous to those of colombo; it was much used during the epidemics of cholera morbus in 1850 and 1853. The analysis cited for the root of *A. fœtida* was published in this JOURNAL, 1886, p. 113, but the root examined was that of *Rumex hymenosepalum.*

Burseraceæ.—Elaphrium Aloexylon, *Schiede*, S. Amyris Linaloe, *LaLlave*, yields the Mexican linaloe wood, which is of a dull yellowish color, soft, often perforated with cavities formed by the larva of an insect; circles of wood parenchyma not readily distinguished from the fibrous layer; ducts large and numerous; medullary rays from two to four cells in width; the tissue contains yellowish odorous resin and oil, and has an agreeable odor resembling that of a mixture of lemon and jessamine. The wood yields from 7 to 9 per cent. of volatile oil, boiling between 189° and 192°. The resin which concretes spontaneously in the bark is used for fumigations.

Compositæ.—Viguiera excelsa, *Hemsley*, is designated as *raíz del manso*, according to Dr. Villada; but it is not stated whether the root resembles that of Echinacea (see AMER. JOUR. PHAR., 1886, p. 76).

Gymnospermum multiflorum, *DeCand.*, grows in the valley of Mexico and, under the name of yerba de tata-lencho, is used as an antirheumatic in the form of tincture, while the decoction is employed for injections in metritis.

Crassulaceæ.—Sedum dendroideum, *Mociño et Sessé*, is the siempreviva de Mexico.

Juglandaceæ.—The bark of Carya ovata contains a crystalline bitter principle, resin, tannin, gum, etc. (G. Mendoza in *Gac. Méd. de México*, III, 99).

Leguminosæ.—Oxytropis Lamberti, *Pursh*, grows in Chihuahua,

and is called *yerba loca.* E. Ordaz found in the plant a crystalline acid, fat, sugar, gum, etc. The plant is used for toothache, it being formed into pulp and this placed into the carious tooth. In rural districts it is asserted that domestic animals feeding on this plant are rendered unfit for work, which has been proven incorrect by the experiments of Professor Gómez.

Calliandra grandiflora, *Bentham,* is found in many parts of Mexico. The part used consists of the contorted rhizome, which is 2 to 6 cm. thick, and has fasciculate fibrous roots; is of a reddish-brown color externally, white internally, inodorous, and of an astringent and persistently acrid taste. Dr. Villepasi determined the presence of fat, wax, volatile oil, resin and tannin; no alkaloidal compound is present. It is employed as an astringent and antiperiodic, and is regarded as possessing antiseptic properties. The dose is 5 or 6 gm. in decoction with 120 gm. of water; a tincture is likewise used. The roots are also employed for promoting alcoholic fermentation, and for preventing acetic and putrid fermentation. The plant is popularly known as *pambotano, lele, cabellos de ángel* (angel's hair), etc., which names are also used for *Pachira insignis.* (See Malvaceæ.)

Melilotus parviflora, *Desrousseaux,* has been naturalized in fields in some parts of Mexico, and is to a limited extent used as a stimulant. *Medicago polycarpa,* which has been mistaken for it, is readily distinguished by its spiral legumes, which are provided with hooked prickles.

Erythrina coralloides, *Flor. Mex. ined.* (see AMER. JOUR. PHAR., 1885, p. 432), has been recently subjected to analysis. Among the important principles isolated by Dr. F. Altamirano from the seeds (*Gaceta Médica de México,* 1888, p. 369) is a peculiar acid called erythrinic acid, and two alkaloids, *coralloidine* and *erythroidine,* the latter of which has a paralyzing effect upon the extremities of the motor nerves. A crystalline alkaloid has also been isolated from the stem bark by Professor J. M. Prieto (Thesis, Mexico, 1890).

Liliaceæ.—Convallaria majalis, *Linné, lirio de los valles,* is not met with in Mexico, but the rhizome is used as a heart tonic, the daily dose being 0·20 gm. given in ten portions.

Linaceæ.—Erythroxylon macrophyllum, *Cavanilles,* and E. mexicanum, *Kunth,* may perhaps be used as substitutes for coca; the former grows in Córdoba and the latter in Chilpancingo.

Lobeliaceæ.—Lobelia laxiflora, *De Candolle*, which is abundant in the valley of Mexico, contains notable quantities of lobeline, according to Torres.

Magnoliaceæ.—Talauma mexicana, *Don*, grows in the state of Morelos, and a second species, probably T. macrocarpa, *Zuccarini*, in Vera Cruz and on the mountains of the Pacific coast. Both are known as *yoloxochitle*, and the flowers, fruit and bark are employed. The former are 8 to 10 cm. long, white, or after drying, yellowish-brown, of an aromatic and astringent taste, and nearly inodorous, but in the fresh state of a peculiar aromatic odor. The flowers of the first-named species contain volatile oil, resin, quercitrin, tannin, etc. (*Gac. Méd. de Méx.*, II, p. 223). The seeds of the second species contain a fixed oil of a disagreeable o or, tannin, coloring matter, and a principle, probably a glucoside, which dissolves the blood corpuscles. The aqueous extract of the seeds, applied subcutaneously to a frog in the dose of 0·001 gm., causes suspension of the respiratory and cardiac movements and contraction of the lungs, killing the animal speedily. The bark is used as an antiperiodic; the tincture of the fresh petals as a tonic; the infusion of the same as an antispasmodic; and the wine prepared with the anthers is a remedy against epilepsy.

Malpighiaceæ.—Malpighia glabra, *Linné*, is the nanche or nanci of Monterrey, Vera Cruz, Morelos, etc. The nance bark of F. Holberg (Am. Jour. Phar., 1886, p. 239) was very likely this bark, a decoction of which is employed for injection in leucorrhœa and metrorrhagia. The aromatic acidulous fruit is used as a refrigerant. Several other species of Malpighia are employed in different parts of Mexico under the same names and for similar purposes.

Malvaceæ.—Hibiscus esculentus, *Linné*, is cultivated in the hot districts of Mexico, and the fruit, which contains considerable mucilage, is used as an aliment, in the preparation of pastilles and syrups, and in domestic practice as a diuretic and pectoral.

Pachira macrocarpa, *Schlechtendal*, grows on river banks from Yucatan to Vera Cruz, and is known as *apompo*. The leaves and flowers contain much mucilage, and the latter are employed for their emollient properties in conjunctivitis. The fruit resembles the mammee (Lucuma) in appearance and contains from 30 to 40 edible seeds which, according to Dr. Altamirano, yield starch 20, glucose 1, tannin 1, albumin 5 and fat 25 per cent. The fat resem-

bles cacao butter, is non-drying, melts near 40°, and is readily saponifiable, producing hard soaps.

Pachira insignis, *Savigny*. An infusion of the root bark is used for curing ulcerated gums and in toothache; the flowers are emollient and, according to Dr. Grosourdy, the seeds are comestible.

Oleaceæ.—The ash employed in Mexico (see AMER. JOUR. PHAR., 1885, p. 556) is Fraxinus viridis, *Michaux*, var. Berlandiereana, *Asa Gray*.

Papaveraceæ.—Bocconia frutescens, *Linné*. The milk-juice has been examined by Prof. Laso de la Vega, who found, besides resins, etc., an alkaloid, *boconine*, and a second alkaloid not sufficiently characterized. Boconine is stated to have properties analogous to those of morphine, to be crystallizable and to form salts having a red color; it may be, probably, identical with sanguinarine and chelerythrine.

Polemoniaceæ.—Lœselia (Hoitzia, *Cavanilles*) coccinia, *Linné*, the *espinosilla* has the leaves alternate, petiolate, oval-lanceolate, mucronately serrate, rough, pubescent, penninerved; flowers axillary, with five linear-lanceolate bracts, a tubular calyx, a red funnel-shaped corolla, five exserted stamens and a tri-fid style; inodorous; taste bitter. (See AM. JOUR. PHAR., 1885, p. 554.)

Polygonaceæ.—Rumex hymenosepalum, *Torrey*, has been repeatedly referred to in this JOURNAL (1876, p. 49; 1886, pp. 113, 115, 158, 264; 1889, p. 395). It is know in Mexico as *râiz del indio*, *râiz de la frontera* (it grows near the northern frontier) and canaigra, and is employed as an astringent and for tanning.

Primulaceæ.—Anagallis arvensis, *Linné*, indigenous to Europe, has been completely naturalized in the valley of Mexico, the plant being used as a substitute for saponaria (see AMER. JOUR. PHAR., 1886, p. 122).

Piperaceæ.—Piper sanctum, *Mociño*. The leaves are petiolate, oval, deeply cordate, acuminate, undulate, pubescent, three-veined, the lateral veins running from the base to the apex of the leaf, forming curved lines on both sides of the midrib, the space thus enclosed being of a lanceolate shape. The leaves have an agreeable, piperaceous odor, and an aromatic and somewhat bitter taste.

Rhamnaceæ.—Rhamnus Humboldtiana, *Rœmer et Schultes*, is the *capulincillo* of Queretaro and other sections. The drupes are of the size of a cherry, dark violet in color, and have a woody endocarp,

enclosing four seeds, of which two are frequently abortive; the testa is membraneous and beset with glandular tubercles filled with a yellow substance; kernel yellowish and oily; inodorous; taste of the mesocarp, very sweet. According to Altamirano, the pulp of the fruit contains crystallizable sugar, much glucose, pectin compounds, tannin, etc. The seeds yield 25 per cent. of yellow oil, and contain, probably, a glucoside, to which the extract owes the property of paralyzing the voluntary motions of a frog when injected subcutaneously in the dose of 0·20 gm.; dogs are not thus affected. The seeds have anti-convulsive properties resembling those of curare and of erythrina (see above). The tincture and aqueous extract are used, the former being given in hourly doses of 20 drops, and of the latter 0·10 gm. every four hours. The extract of the pulp is inert.

Rhamnus Purshiana, *DeCandolle*, is stated to have laxative, tonic and febrifuge properties.

Ceanothus azureus, *Desfontaines*, and C. cæruleus, *Kunth*, are known in different parts of the country as *chaquira* or *chaquirilla*. The bark is employed as a tonic and febrifuge; the root in gonorrhœa and syphilitic complaints, and the decoction of the leaves in aphthæ and ulcerated throat.

Rosaceæ.—Licania arborea, *Aublet*, is the *cacahuananche* of the states of Guerrero, Morelos and Michoacan. The drupe, which is the part employed, has the shape of an olive; testa membraneous cotyledons large, fleshy, plano-convex, rose colored, oily, of a disagreeable rancid odor and a nauseous taste. The seed yields 36 per cent. of fat, melting between 34° and 39°, and easily saponified, furnishing a hard soap. A fat acid may be extracted from it, melting at 88°, and useful for the manufacture of candles. The wood is useful for various purposes.

Cerasus Capollin, *De Cand.* (see Am. Jour. Phar., 1885, p. 388). The leaves are short petiolate, oval oblong, very acuminate, finely dentate, glabrous, coriaceous, of a bitter almond odor and bitter taste.

Agrimonia parviflora, *Aiton*, is used in place of A. Eupatoria, *Linnê*.

Potentilla candicans, *Kunth*, s. P. lineariloba, *Seringe*, is the *sinfito* of Central Mexico. The rhizome and roots, as seen in commerce, consist of fragments 2 to 4 cm. long, of the thickness of a quill to that of a finger, cylindrical, with a thin brown bark, and with scars

from the detached rootlets, on the upper side with imbricate, scarious brown scales, and the terminal bud surrounded by a tuft of white hairs; the transverse section shows inside the dark cambium line a circle of linear radiating fibrovascular bundles; wood white mottled with reddish; pith thin; inodorous; taste astringent. The rootlets are deeply wrinkled longitudinally. The drug has astringent properties, and is employed in the place of comfrey.

Rosa Monctezumæ, *Red.*, yields *una de gato*, the hips, which are used in the place of those from Rosa canina, Lin., of Europe.

Quillaia Saponaria, *Molina*. The alcoholic tincture of the bark is used for emulsionizing oils.

Sapotaceæ.—Achras Sapota, *Linné*, s. Sapota Achras, *Miller*, grows in the hot districts of the republic, and is popularly known as *chicozapote*. The bark is from 5 to 12 mm. thick, externally dark gray, longitudinally striate, marked with roundish leaf-scars, with whitish or greenish patches, and with ridges more prominent in the thicker bark; inner surface dark chestnut-brown; fracture fibrous in the inner layer; odor slight; taste astringent and somewhat bitter. Bernon found in the bark an alkaloid, *zapotine*, a peculiar acid, zapotinic acid, and crystallizable sugar, glucose, starch, mucilage, pectin, albumin, resins, fat, etc. Dr. Berthrand employed the bark as a stimulant and antiperiodic.

To the same plant is also referred *chicle*, reference being made to a thesis by A. Uribe, on various products of the chicozapote, and it is stated that a similar substance is prepared from the leaves and stem of *Asclepias lanuginosa*, which grows in abundance in the Valley of Mexico. *Chicle virgen*, which is yellowish and internally white and homogeneous, is prepared from the fruit by allowing the juice to ferment for a few days, when the chicle is deposited and the aqueous liquid is separated. *Chicle común* is procured from the milk juice exuding from incisions made into the bark, and hardening upon the trunk; it is externally reddish and internally rose-colored. The constituents found by Uribe are 44·8 crystalline resin soluble in ether and alcohol; 17·2 caoutchouc; 9·0 sugar; 6·4 gum; 8·2 starch, coloring matters and salts, the balance being water and loss.

Chrysophyllum glycyphlœum, *Casaretti*. Monesia has tonic, astringent, antihæmorrhagic and antidysenteric properties, the daily dose being from 0·3 to 1·5 gm.

Sapindaceæ.—Cardiospermum molle, *Kunth*, indigenous to vari-

ous parts of Mexico, is regarded as possessing lithontriptic and diuretic properties, the root being used under the name of *munditos.*

Scrophulariaceæ.—Castilleja canescens, *Bentham,* grows in the Sierra Madre, in Northern and Central Mexico, the popular name being *cola de borrego.* It has the leaves entire, linear-lanceolate, semi-amplexicaul, the floral ones broader and acute, and the upper ones somewhat colored at the apex; calyx tubular, compressed, cleft on one side; corolla bilabiate, the upper lip galeate, the lower lip with three short teeth; inodorous; taste bitter and aromatic. Prof. Luna found in the plant volatile oil, bitter principle, etc. The drug augments the salivary and urinary secretions, and has been used by Dr. Galindo as a stimulant in hepatic colics. Dose, 4 gm., in infusion, with 120 gm. of water.

Sterculiaceæ.—Guazuma ulmifolia, *Lamarck,* and several other species of the same genus growing in Southern Mexico, have a mucilaginous bark which is employed as an emollient and for the clarification of sugar. The fruit is capsular, almost globose, or ovoid, blackish-gray, with numerous acute tubercles and irregular crevices upon the surface; the five cells contain angular gray seeds having a coriaceous and dotted testa. The fruit is used as an emollient and astringent.

Solanaceæ.—Nicandra physaloides, *Gærtner,* grows in the valley of Mexico, and is known as belladona del país. The leaves are petiolate, oval-lanceolate, acute, wedge-shaped at the base, sinuate-dentate, ciliate, somewhat hairy, and without the whitish dots observed upon belladonna leaves. The leaves are reputed to possess the same properties as belladonna leaves, but no exact observations on this point have been recorded. Professor Perez announced the presence of an alkaloid, the nature of which has not yet been determined. See also AMER. JOUR. PHAR., 1889, p. 554.

Physalis Costomatl, *Mociño et Sessé.* The root is diuretic, and is used against diarrhœa and for suppressing the secretion of milk.

Ternstræmiaceæ.—Ternstrœmia Altamirania, *Schiede;* T. sylvatica, *Schlecht.* (See AMER. JOUR. PHAR., 1886, p. 169). Leaves elliptic, entire, glabrous, glossy, ribs prominent, the ultimate divisions forming a network of fine meshes; inodorous; taste slightly bitter. Guevara (Thesis, 1881) ascertained the presence of coloring principles, resin, tannin, gum, glucose, and, probably, theine. The leaves of T. Tepezapote, *Schlecht.,* of Mazatlan are used in like manner for baths against rheumatism.

Turneraceæ.—Turnera aphrodisiaca, *Ward*, grows in San Luis Potosi and other parts of Northern Mexico; its common name is damiana de California.

Verbenaceæ.—Verbena supina, *Mociño*, is used under the name of *cantuezo*, as a substitute for Lavandula Stoechas, Linné.

Lippia citriodora, *Kunth*, known as *cedron*. Leaves in whorls of 3 or 4, lanceolate, acute, entire, 8 to 10 cm. long, 2 cm. broad, the secondary nerves forming with the midrib nearly a right angle; odor lemon-like; taste aromatic. They possess antispasmodic properties.

Urticaceæ.—Cecropia mexicana, *Hemsley*, is the *coilotapalo* of Michoacán and the valley of Mexico. Its milk-juice is used as an escharotic for indolent ulcers, and for destroying corns and warts.

Ficus (Urostigma, *Miquel*,) nymphæfolia, *Linné*. From incisions made into the bark *tescalama* is obtained. The milk-juice forms roundish masses, varying in size, soft, elastic and adhesive, ductile when mixed with vegetable or earthy substances; gray, in thin layers white and transparent, on exposure to the air turning hard and yellow (hence it is to be kept under water), in boiling water becoming very soft and more adhesive; odor urinous, disagreeable; tasteless. According to Dr. Altamirano it contains caoutchouc 15, amatlin (resin soluble in alcohol) 55, ether-soluble resin 5, pectin and salts 17, and insoluble matter 2·5 per cent. Sand, ashes, earthy matters, vegetable fragments, and chicle are used for adulteration, the latter being recognized, according to Uribe, by boiling with water when, in the presence of chicle, the liquid will become yellow, and with hydrochloric acid rose colored. Tescalama is used as a substitute for ocuje de la Habana (see AMER. JOUR. PHAR., 1886, p. 23), for fractures, as a plaster against urinary affections, etc. Altamirano has used it in the preparation of porous plasters.

Zygophyllaceæ.—Larrea mexicana, *Moric.*, is the gobernadora de Mexico (see also AMER. JOUR. PHAR., 1885, p. 601), and grows in the northern Mexican States; also in the United States from Texas and Southern Colorado westward, where it is known as creosote-bush, owing to its peculiar odor. The leaves are employed in Mexico in the form of fomentations and baths against arthritic pains, and the infusion internally in dysuria. Analyzed by Chavez, the leaves were found to contain tannin, resin, volatile oil, etc. The resin exuding from the plant is useful for varnishes. The buds preserved in vinegar are a substitute for capers.

THE MEDICINAL AND OTHER USEFUL PLANTS OF ALGERIA.

By P. L. Simmonds, F.L.S.

[*Continued from p. 12.*]

Cucurbitaceæ.—*Citrullus Colocynthis*, *Ecballium Elaterium* and *Bryonia dioica* are common, but not used. The seeds of *Cucurbita Pepo* are employed as a taenifuge. *Cucumis sativus* is used to perfume a cucumber pomade. The fruit of *Momordica Balsamina*, preserved in alcohol, is employed as a vulnerary by the Spaniards.

Illecebraceæ.—*Paronychia argentea* is much employed by the Arabs as a tea infusion; one house exports 650 pounds annually. Other species are also used, viz: *P. nivea*, *capitata*, *longiseta*, etc.

Cacteæ.—*Opuntia Ficus-indica.* The branches rasped are mucilaginous and employed as cataplasms. The mucilaginous flowers, slightly astringent, are a good remedy in diarrhœa. The use of the fruit by the natives leads to frequent mechanical constipation.

Ficoideæ.—Many species of *Mesembryanthemum* were formerly used in medicine. *M. cristallinum*, reputed febrifuge, is found wild and is also cultivated.

Umbelliferæ.—*Thapsia garganica* is very widely spread over the Tell and the elevated districts. The bark of the root is exported to extract the resin used in the manufacture of a revulsive plaster, and this resin is also prepared at Arba and at Constantine. The Arabs who have received this medicine from the Greeks have always held it in high honor as the local name implies, *Bon-Nefa*, "father of health." It is employed internally and externally, and is believed to be the silphium of the Greeks. *Thapsia villosa* is less active than the preceding.

Ferula communis. This plant, very common in Algeria, near the Moroccan frontier, yields voluminous tears of a gum resin much resembling ammoniac, and is probably the product formerly sent from Morocco under the name of Fushog. This product was attributed to *F. tingitana*, but this plant, as well as *F. longipes*, *vesceritensis* and *tunitana*, only yield small quantities of gum resin. To the usage of the root of *F. communis* in a time of dearth as food was attributed a special cutaneous disease.

Conium maculatum. The Arabs employ the seeds of this plant as sedative, under the name of Harmel, which is that of *Peganum Harmala*.

Coriandrum sativum.—The Arabs employ the leaves of this plant instead of parsley, notwithstanding its strong offensive odor.

They collect for food, under the generic name of "Talronda," the tubercles of many umbellifers, *Carum*, *Bunium*, *Balansæa*, etc.

COMPOSITÆ.—*Anacyclus Pyrethrum* furnishes a pellitory root, which is employed by the Arabs and exported from Tunis to India in large quantities. *Pyrethrum Willemoti* and other species, the pulverized flower-heads of which are sold as insecticides, succeed well in Algeria. They have been tried for the destruction of an insect called Altise, which attacks the vine.

Anthemis nobilis, the Roman chamomile, is found wild, but that found in commerce is imported from Europe. The Arabs employ for the same purposes *Perideræa fuscata*, *Santoline Chamæcyparissus*, *S. squarrosa*, etc.

Diotis candidissima is sold in the markets as a febrifuge and emmenagogue.

Artemisia arborescens is employed in medicine by the Arabs, and sold in all the markets. The roving distillers make an essence of absinthe.

Artemisia Huba-alba is used by the Arabs as Semen-contra. The natives also use many other corymbifera, such as *Pulicaria mauritanica* with a strong camphor odor, *P. dysenterica* and *Inula viscosa*, *Erigeron canadense* and *Coryza ambigua*, which abound, are sometimes employed as diuretics.

Atractylis gummifera. This plant has caused many deaths by poisoning. The large root divided furnishes an abundant milky juice, which concretes into tears like small nuts. These tears pressed into balls, about the size of the fist, are commonly sold for bird lime. The artichoke, which is found wild, furnishes the Arabs with food in its flower heads and sides of the leaves. The *Warionia Saharæ* (Bentham), is employed medicinally by the natives.

ERICACEÆ.—The roots of *Arbutus Unedo* are collected in small quantities for medical use; the leaves are used for tanning skins.

SOLANACEÆ.—*Withania somnifera* is employed at the Civil Hospital, Alger, as a sedative and hypnotic. The seeds are diuretic. The plant contains an alkaloid, which is probably the active principle.

Esteemed by the ancients as equal to opium, it has been since neglected. *Nicotiana* is grown by the Arabs. *Capsicum annuum* and *frutescens* are largely cultivated. A number of solanums, several of which have active principles, are cultivated for ornament in gardens.

OLEACEÆ.—*Fraxinus excelsior* is common. The Arabs employ the fruit medicinally and as a spice. The manna ash *F. Ornus* and *F. rotundifolia* are easily grown.

The Jasmines are cultivated with great facility, and can be utilized for enfleurage.

GENTIANCEÆ.—*Erythræa Centaurium*, common among the thickets, is exported in large quantities. One house of Alger ships 5,000 to 7,000 pounds yearly, and certain herbalists give special attention to this plant. *E. pulchella*, which is less bitter, is often substituted for it. *Chlora grandiflora*, very plentiful, might be tried.

BORAGINACEÆ.—*Borago officinalis* is very abundant, and two thousand five hundred pounds of the flowers are annually exported.

Alkanna tinctoria is common but little collected. *Heliotropium europæum* is also common, and grows to a considerable size. It possesses a toxic alkaloid.

LABIATÆ.—This family is richly represented in Algeria, and it is strange that the ambulant distillers have not utilized the plants of rosemary, lavender and thyme so common on the heaths. Pennyroyal is very common, and is largely exported. Messrs. Chiris & Gros estimate the production of the essential oil of *Mentha Pulegium* at 4,500 pounds. *Mentha rotundifolia, aquatica* and *sylvestris* are also distilled.

Many species of indigenous *Salvia* are utilized. *Calamintha officinalis* and *Teucrium Polium* are much used by the Arabs. *Marrubium vulgare* is sometimes employed as a febrifuge.

VERBENACEÆ.—*Lippia citriodora* is much cultivated. Legout & Peyron export annually over 1,700 pounds of the leaves of this odoriferous verbena. The flowers of *Citharexylum quadrangulare* might be utilized for enfleurage.

Globularia Alypum, very common; is much employed by the Arabs in medicine, so is the *Limoniastrum Guyonianum* as an anti-scorbutic.

THYMELACEÆ.—*Daphne Gnidium* is employed by the Arabs as a blister, and the leaves to dye yellow and to bring on abortion. The woody *Passerinæ* have also vesicant barks.

CYTINACEÆ.—*Cytinus hypocistis* is extremely common in Algeria. It is to be regretted that the extract obtained from the juice, which was formerly a valuable astringent medicine, has fallen into disuse.

URTICACEÆ.—*Parietaria officinalis* is abundant, and collected for medical use and exported. The seeds of *Urtica pilulifera* are employed in native medicine under the name of Oundjoura.

CANNABINACEÆ.—*Cannabis indica*, under the name of *kif*, is habitually smoked by the natives, and all the measures to restrain its use have been ineffectual. Hence there is an important traffic carried on in this product.

JUGLANDACEÆ.—*Juglans regia.* The leaves are collected in small quantity for medical use. The bark of the roots is employed as a dentifrice by the Arabs, who have in general remarkably fine teeth.

CONIFERÆ.—*Cedrus Libani.* Although this cedar is abundant in Algeria, it is remarkable that no use has been made of the odoriferous wood, and the resin which has an agreeable citron odor. What is sold as cedar oil is obtained from *Juniperus virginiana.*

Callitris quadrivalvis. The resin, very partially collected, constitutes the sandarac of commerce.

Pinus halepensis furnishes also an abundant resin.

Juniperus Oxycedrus is very common, and is sought by the natives for the manufacture of oil of cade.

LILIACEÆ.—*Scilla maritima*, s. *Urginea Scilla.* Before the clearance of the land this squill covered all the culturable lands of the Tell. It attains a large size, the bulb often weighing 14 or 15 pounds. It is collected in large quantities for medicine, owing to its bitter principle. The house of Legout & Peyron, of Alger, export annually about 1,300 pounds of the dried bulbs. All the aloes are easily cultivated, but no useful product is obtained from them.

AMARYLLIDEÆ.—*Agave americana* is very common, but is not now employed medicinally as formerly. The pulp obtained in crushing the leaves is rubefiante. According to Marcano if meat is moistened with the sap of the Agave it soon develops a pepsinogenous mycelium, which transforms the flesh into peptone. Among the other amaryllids formerly employed in medicine were the *Pancratium maritimum* very common, and *Amaryllis Belladonna*, said to be poisonous, much grown for ornament.

ORCHIDACEÆ.—If salep came again generally into use, no plants could be found more useful than *Orchis Munbyana and Robertiana*, the tubercles of which attain enormous dimensions. *Vanilla* is only cultivated in green-houses. There has been much talk of a pretended indigenous "Faham," obtained from the dried leaves of *Aceras anthropophora*. In reality this product is of little importance and has never been seriously utilized.

FUNGI.—*Claviceps purpurea*; Ergot. Rye is very little grown in Algeria, but *Dyss* (*Ampelodesma tenax*) is extremely common, and an ergot is formed on it very abundant in rainy seasons. It is richer in ergotin than rye ergot, 18 instead of 14 per cent. The ergot of *Claviceps microcephala* is frequently met with on *Arundo Pliniana* and might be tested.

Finally it may be stated that M. Lallemant, chemist and druggist at Arba, exports considerable quantities of myrtle leaves, lesser centaury, thapsia root and pennyroyal. According to the Customs returns, the following were the exports: Sarsaparilla root, 150 pounds in 1886 and 1887; liquorice root, 200 pounds in 1886, none in 1887; other medicinal roots, 40,000 pounds in 1886 and only 19,000 pounds in 1887; citron, orange and other peel, 5,200 pounds in 1886 and 8,500 pounds in 1887; medicinal barks, 8,700 pounds in 1886 and 5,000 pounds in 1887; medicinal herbs, 163,000 pounds in 1886 and only 33,600 pounds in 1887; other leaves about 13,000 pounds yearly; lavender and orange flowers about 550 pounds yearly; other flowers, 39,000 pounds in 1886 and 8,000 pounds in 1887; non-spirituous perfumes, 15,500 pounds in 1886 and 71,500 pounds in 1887; essential oils of different kinds, 51,000 pounds in 1886 and only 26,000 pounds in 1887.

BROMOFORM.

BY GEORGE M. BERINGER, Ph.G.

Read before the Philadelphia College of Pharmacy at the Pharmaceutical Meeting, January 20.

Attention was first called to the value of bromoform in the treatment of whooping cough, by Dr. Stepp, of Nürnberg, in 1889, who attested to its value, both in inhalation and in internal administration. He recommended the following prescription for internal administration: Bromoform 10 drops, Alcohol 3 to 5 cc., Aqua destillata 100 cc., Syrupus 10 cc. He states that bromoform is

entirely non-poisonous; giving a child of 5 to 10 years of age 15 to 20 drops in 100 to 120 cc. of solution, he claims to cure in 5 to 10 days. It may also be administered in capsules. (*Phar. Zeitsch. für Russland*, 1889, p. 775.)

Since then, his statements have been confirmed by Prof. Senator and Dr. Loewenthal, in Germany, and recently by Dr. Louis Fischer, of New York. The latter details in the Medical Record, a number of cases of pertussis in which he had used bromoform and writes: "I have in all, used bromoform in fifty-one cases and still have several under observation; and there is no question but that it is the best known remedy when properly applied." He prefers "giving it after food in a small teaspoonful of water. Owing to its weight, care must be taken to see that the child swallows the bromoform and that it does not remain in the spoon." Dr. Fischer recommends the following doses: "One year or under 2 to 3 drops three times a day, two to four years of age 3 to 4 drops three or four times a day. Under eight years of age 4 to 6 drops. After the third or fourth day the dose was usually increased gradually by adding one drop to the usual dose."

Dr. Rabuteau long ago proposed to use bromoform as a local anæsthetic, claiming that it was less revulsive and painful than the application of chloroform. (AMER. JOURN. OF PHARMACY, 1875, p. 370.)

In 1874, Prof. Walter George Smith, in the course of a lecture on "Therapeutical Remedies Recently Introduced" (see *Pharm. Journ. and Trans.*, 1874, January, p. 623), speaks of bromoform $CH.Br_3$ as a *reddish liquid* and says "it is *irritant* and does not appear likely to fufil any useful indications in practice." It is perhaps needless to state that the specimen of bromoform possessed by the professor must have been decomposed and unfit for use.

In looking over the literature relating to bromoform, one is confused by the discordant statements of the various investigators. As, for example, Carnelly, in "Melting and Boiling Point Tables," quotes the boiling point, as obtained by various authorities, 144° C. to 152° C., and solidifying point at + 7·8° to — 9°, and the specific gravity has been variously stated at from 2·13 to 2·90 These varying statements, copied into the various text books and dictionaries of chemistry, leave one desirous of preparing the compound, in doubt as to the correct data to accept as proof of the purity of the product.

Gmelin (Cavendish edition, vol. VII, p. 339) gives several of the methods used for preparing bromoform. Löwig first prepared it in 1832 by distilling bromal (tri-brome acetaldehyde) with excess of solution of potassium hydrate. The watery distillate was decanted from the bromoform, and the latter dehydrated by sulphuric acid. His product is reported as having a specific gravity of 2·13, and must have been impure.

Dumas is stated to have first obtained it pure and recognized its composition, by distilling alcohol or acetone with excess of aqueous bromide of lime. The bromoform was shaken with sulphuric acid, separated and then treated with calcium chloride. This is the process, it is believed, that is generally followed in preparing the commercial article.

Lefort obtained it by gradually adding bromine to a solution of one part of potassium hydrate and one part of wood spirit, kept cool, until the liquid became colored. The bromoform which goes to the bottom is purified over calcium chloride which retains the undecomposed wood spirit. L. Reuter (*Ph. Zeit.*, 1890, p. 5, see AMER. JOURN. OF PHARMACY, 1890, p. 89) made use of the same process and reports the product as a colorless liquid, sp. gr. 2·8, boiling point 150° C. It seems almost superfluous to state here that absolutely pure methylalcohol yields neither chloroform, bromoform nor iodoform, and that the amount of bromoform produced by this method is but a measure of the acetone or other ketones existing as impurities in the alcohol used. In confirmation of this statement, see *Watt, Chem. Diction.*, Supplement II, p. 324, also *Archiv der Pharmacie*, 1887, p. 376.

More recently Fritz Günther has proposed the following process: Acetone is mixed with 10 parts by weight of 20 per cent. soda solution in a flask connected with a reversed condenser. Bromine is gradually added in very small quantities, through a funnel tube until bromoform ceases to be formed, the temperature being maintained during the operation by means of a water-bath at 50° C. 1·9 grm. acetone was said to yield 6·7 grm. bromoform, about 81 per cent. of the theoretical yield (*Archiv der Pharmacie*, 1887, 378).

No mention is here made as to the character or purity of the product. In my hands satisfactory results were not obtained with this process. Pure acetone will not mix with 20 per cent. soda solution, and on agitation therewith, even at as low a temperature as 50° C.

it, on separation, is considerably darkened and resinified. Tried on an experimental scale neither the yield nor product were satisfactory, and hence this process was abandoned.

The following modification of Dumas process was adopted, the quantities given being those found convenient for experimental purposes.

Four ounces of marble lime were slaked and then mixed with one quart of water, and the milk of lime thus made transferred to a flask connected with an inverted condenser. A funnel tube is passed through the cork and reaches below the surface of the liquid. In order to obtain mechanical agitation so as to keep the lime dispersed through the liquid, a small glass tube was run to near the bottom of the flask, and extending through the cork was attached to a rubber atomizer bulb. By pressing this bulb sufficient air was forced into the mixture to keep it thoroughly agitated, thus supplying the place of the mechanical agitator of the manufacturer. Four ounces of acetone was added in portions, one-half being added at once and the remainder gradually during the operation. The contents of the flask are maintained at a temperature of 45° to 50° C., slightly below that of the boiling point of acetone, and bromine is gradually added in small quantities through the funnel tube, the mixture being thoroughly agitated as each portion is added. When the reaction is completed and the further addition of bromine yields a yellow color, a sufficient quantity of milk of lime is added to render the solution decidedly alkaline and distilled at once. The bromoform, although boiling at a much higher temperature than water, comes over in the first portion of the distillate. The aqueous portion of the distillate usually contains considerable acetone, and may be returned to the flask and used in a subsequent operation.

The bromoform obtained was repeatedly washed with water, separated and treated with calcium chloride and then distilled. I was surprised on attempting to fractionate the liquid to find that a portion of the distillate was obtained below 100° C., a fraction being collected between 90° and 100° C. On agitating 5 cc. of this fraction with 20 cc. water in a stoppered graduated cylinder, but 1 cc. separated, the remainder being dissolved. The aqueous portion separated, possessed the odor of acetone, and yielded iodoform, with iodine and potassium iodide in an alkaline solution. The heavy oily liquid possessed the odor and taste of bromoform, but the small amount

remaining precluded any further investigation. The fractions obtained between 100° and 140° C., being small in quantity, were mixed, and 5 cc. agitated with 20 cc. of water but 2 cc. remained undissolved. The aqueous portion likewise gave the iodoform reaction.

The presence of acetone in the bromoform after repeated washing with water is worthy of notice, and shows the necessity of fractionally redistilling the product. Richter (*Organic Chemistry*, p. 161) states that "acetone in the presence of caustic soda combines with chloroform, yielding *acetone chloroform*

$$(CH_3)_2C\begin{matrix}OH\\CCl_3\end{matrix}$$

It seems not unlikely that under similar conditions a corresponding compound may be formed with bromoform.

The fraction distilling at 143° to 148° C. showed a sp. gr. of 2·8645, and that collected at 148° to 151° C. had a gravity of 2·9082. These fractions were exposed on a recent cold morning, and at 9°–10° began to cloud, and when the thermometer marked 8° crystals began to appear, and at 6° C. a mass of crystals had formed in each. These were quickly transferred to a funnel, a small layer of absorbent cotton having been placed in the angle of the funnel and the liquid portion allowed to drain. The funnel was now brought in-doors and the crystals allowed to melt, the first portion that escaped from the funnel was collected separately and the remainder was collected in a perfectly dry, clean vial, and is believed to be chemically pure bromoform. It showed the following characters: specific gravity 2·900 at 15° C., boiled steadily at 147° to 148° C, and became crystalline at 6° to 8°, and a firm, solid mass at + 4·5° C. These temperatures were obtained with a thermometer corrected at Yale.[1]

The lower boiling fractions showed no signs of any crystals at 0° C.

The liquid remaining in the flask contains considerable calcium bromide. An attempt was made to recover the bromine therein as

[1] Since writing the above, Prof. Maisch has called my attention to the results reported by W. H. Perkin in Journal of the Chemical Society, Proceedings, 1884, p. 533, viz: spec. grav. 2·90246 at 15° C.; melting-point 7·8°, and boiling-point 120·3° (pressure 330 mm.). The boiling-point stated is evidently a mistake, possibly a misprint.—G. M. B.

bromoform. Sufficient milk of lime was added to render the liquid decidedly alkaline, acetone was added and then chlorine gas was passed through as long as bromine was indicated by the reddening of the liquid as each bubble of gas escaped, agitation being continued as before. The liquid was then distilled and the heavy liquid separated and washed showed a gravity of 2·22. This was treated with calcium chloride and then fractionated and yielded also considerable of the lower boiling fractions. The fraction distilling at 144° to 149° C. showing a gravity at 15° C. of 2·8938 was exposed to a temperature sufficiently low to crystallize and the crystals separated after melting, yielded a liquid, sp. gr. 2·8963 at 15° C.

Care must be taken to add the bromine in small portions and to have the contents of the flask decidedly alkaline or there will be formed more or less mono-brom acetone a serious contamination of the product. This compound is a very powerful irritant, a few drops escaping in the room so irritates the eyes and nostrils as to render the atmosphere unendurable. As its boiling point, 140° to 145° C., approaches nearly that of bromoform it cannot be separated by fractionating alone. In experimenting with the process of Günther, above mentioned, the writer was unfortunate enough to obtain some mono-brom acetone greatly to the discomfit of himself and other occupants of the room. The contaminated product was treated with solution of sodium carbonate, which removed but slightly the troublesome compound. It was then agitated with lead oxide, water was added, the whole thoroughly shaken and thrown in the flask and redistilled. The resulting distillate washed and then fractionated yielding an unobjectionable product.

Bromoform like chloroform is a solvent for caoutchouc, guttapercha, fats, oils, resins, essential oils, sulphur, phosphorus and iodine. It is miscible or soluble in chloroform, ether, alcohol, carbon bisulphide, methyl alcohol, acetone, amyl alcohol, benzol and benzin and is but very slightly soluble in water. It is very difficult to inflame, but its vapor, like that of chloroform, colors the flame of a Bunsen burner green. Mixed with alcohol it burns with a smoky flame colored green on the edges and giving off acid fumes. It is easily decomposed by light and should be kept in amber-colored vials and not unlikely the decomposition as in chloroform could be prevented by the addition of a small amount of alcohol.

Bromoform suitable for medicinal purposes should answer the following requirements: a colorless volatile liquid having a characteristic odor and a penetrating sweet taste, specific gravity 2·86 to 2·90, and should vaporize without leaving any residue at 147° to 150° C. A few drops evaporated from a watch crystal or filter paper and the vapor inhaled should not irritate the eyes or nostrils. Agitated with sulphuric acid no color should be imparted to either liquid. Treated with liquor potassa no coloration should be produced. On agitating with distilled water, the water separated should not show an acid reaction to test paper, nor yield a precipitate with silver nitrate nor on adding it to a weak ammoniacal solution of silver nitrate and allowing to stand, should a metallic mirror be formed.

INTERFERENCE OF MERCUROUS SALTS IN DETECTING SILVER SALTS.

By Frank X. Moerk, Ph.G.

Contribution from the Chemical Laboratory of the Philadelphia College of Pharmacy.—No. 83.

Read at the Pharmaceutical Meeting, January 20.

At the November Pharmaceutical Meeting a note was read on the above subject, in which the fact was brought out that in testing qualitatively solutions containing silver and mercurous salts, the silver chloride was not always dissolved in the ammonium hydrate, and then of course could not be reprecipitated on addition of nitric acid. While this method is not used quantitatively, still it is of importance to know under what conditions a qualitative test may fail. In the present paper approximate results are given with the following solutions of known strength:

	Per Cent.				Per Cent.			
I.	$AgNO_3$	1	and	$Hg_2(NO_3)_2$	1·35			
II.	"	1	"	"	2·70			
III.	"	1	"	"	4·05			
IV.	"	1	"	"	5·40			
V.	"	1	"	"	6·75			
VI.	"	1	"	"	9·45			
VII.	"	1	"	"	10·00			
VIII.	"	0·2	"	"	0·27			
IX.	"	0·2	"	"	1·35			
X.	"	1	"	"	5.40 with $Pb(NO_3)_2$		1	per cent.
XI.	"	1	"	"	10·00	"	1	"

5 cc. of these solutions were precipitated by addition of 5 cc. dilute HCl, the precipitate washed with cold water (in X and XI also with boiling water), 5 cc. water of ammonia poured over the precipitate which had been loosened from the filter by use of a glass rod, the filtrate returned to the filter and allowed to run through again; the filtrate was then acidified with HNO_3. This test is called the Regular test. The black residue, after thorough washing with water, is removed as completely as possible from the filter (by using a jet of water), nitric acid added, the mixture evaporated to a very small bulk, diluted with water and dilute hydrochloric acid added; this test is called the Residue test. Speaking now of solutions I to VII, inclusive, the Regular tests for silver rapidly became fainter until in No. IV a decided turbidity appeared, while in VI and VII only a faint turbidity was noticeable. The Residue test, on the other hand, increases in quantity of precipitate as the Regular test decreases; in solution I the two tests are nearly alike, showing that using the mercurous and silver nitrates in about equal quantities, only one-half of the silver chloride is dissolved by the ammonium hydrate, the other half remaining in the residue.

To ascertain if more dilute solutions give different or more favorable results, VIII and IX were made by diluting I and V with four volumes of water; the results did not differ much from those obtained with the stronger solutions. In VIII the Regular and Residue tests were of about equal intensity, while in IX the Regular test gave only a very faint turbidity.

To examine the influence of lead salts solutions X and XI were prepared; it will be noticed that they correspond to IV and VII with addition of 1 per cent. $Pb(NO_3)_2$. The Regular and Residue tests did not differ materially from those obtained with IV and VII; this refutes the statement previously made that in the presence of lead salts, the silver test was not interfered with.

From these experiments it is shown that in the presence of mercurous salts the regular test for silver is *never* in accord with the quantity of silver salt present, and that if the proportion of mercurous salt be to silver salt as 6 or more to 1, then the silver may easily escape detection; hence it is recommended to test the ammonia residue as well as the ammonia solution for silver.

PRESCRIPTION OWNERSHIP.

By Joseph W. England, Ph.G.

Read before the Philadelphia College of Pharmacy at the Pharmaceutical Meeting, January 20.

A prescription may be defined as a general order drawn upon any pharmacist for certain specified drugs, in certain specified quantities, to be prepared by recognized methods of pharmaceutical procedure. It is issued as an official order to obtain certain remedies necessary to carry out a quasi-contract, *i. e.*—the relieving or curing of a patient of a bodily ailment. Such an order is legally issued only by authorized officials or physicians, who have qualified themselves for such work, by becoming graduates in medicine and registrater of a State Medical Board.

A patient consulting a physician receives for a consideration—what? A medical examination and medical directions, one of which latter is the taking of certain drugs properly prepared. The patient is not competent to do this any more than he is to prescribe for himself, so the physician gives him an official order or prescription upon the pharmacist.

A prescription having been received by the pharmacist, he marks it with certain marks of identity, such as the number, date and year, and labels it, when compounded, with similar markings, together with the directions and the physician's name, for the purpose of future identification.

This official order differs in nowise from any other official order. Universal custom, that great mother of human laws, requires that it be retained by the party upon whom it is drawn, as prima facie evidence of its execution.

A claim that a prescription is a formula, and, as such, property for which the patient has given due compensation is untenable, for the reason that they are not identical. A formula, in the accepted meaning of the term, is a recipe of a product yielding constant, uniform results on being used. A prescription is an experimental recipe, which may or may not yield the desired results, even in the hands of a physician, and whose use by unskilled hands is fraught with the gravest possibilities. Medicine is not yet an exact science, any more than human beings are exact structures. A prescription is but a part of the medical treatment and not the whole of it, and

the treatment of every sick person must of necessity vary with the personal idiosyncrasies of each case.

To whom, then, does the prescription legally belong? To the physician? Certainly not. He has been paid for *all* services rendered. To the patient? No; for in his recovery to health he has received *all* that he paid his medical adviser for. To the pharmacist? Yes; by every right of custom and law, provided he has accepted it under certain conditions. If the patient makes a request for its return on presenting it, the pharmacist has one of two lines of action before him. He must either refuse to compound it under such conditions, or, express a willingness to compound it and give a duplicate copy. If the latter proposal be refused, he should return the original prescription without compounding. On the other hand, if the prescription is committed to his hands with no primary request for its returnal after being filled, and he has affixed his marks of identity and compounded it, he should retain the original copy as legal evidence that he has prepared such a prescription.

As showing the legal value of a prescription it may be of interest to state that Mr. Robert England informs me, he has been subpœnaed in three cases within the last three years to produce certain original prescriptions for the purposes of first, To prove attendance in a suit for medical services. Suit was won. Second, To prove that a physician used drugs for malpractice. Physician convicted; and, third, To prove that a medical student illegally practised medicine. In this latter case, the patient dying and the student being unable to give a certificate of death, the case was examined by the Coroner, and when confronted with the prescriptions confessed guilty. In each instance, however, the legal authorities returned the prescriptions, thus tacitly admitting their ownership.

But this whole question of prescription ownership, to my mind, is essentially one of law, and viewing it from that standpoint, it presents some most interesting features. I have been fortunate in securing for this afternoon's meeting an expression of opinion from that eminent authority on civil law, Mr. Richard C. McMurtrie, of this city.

He writes me as follows:

BULLITT BUILDING, January 15, 1891.

Dear Sir: You ask who is the owner of a prescription? The physician who writes it, the patient for whose use it is written, or the apothecary to whom it is handed to compound?

Evidently the only dispute can exist in a case in which the physician and the patient have parted with the possession of the paper, and it has lawfully come into the hands of the apothecary, at the instance of the patient.

The universal practice appears to me to point where the title is for all purposes but one. I presume it is the custom to refill a bottle with a prescription indicated on the label. The patient is not required to purchase a new prescription every time he wishes the order filled—and this appears to me plain, from the consideration that he could secure this by copying the paper before using it.

Moreover, he has paid for the composition and skill required for that purpose, and the delivery to the apothecary is for a particular object, and there is in that transaction nothing implying a transfer of property in anything by the patient to the apothecary.

But the practice certainly is for the apothecary to retain the documents. I presume no one ever heard of a prescription being returned with the dose to the patient.

It is obvious there is nothing indicative of a sale or transfer of title on that footing in this transaction. There is something analogous in respect of a check. The return of these instruments arises out of distinct considerations. Accepted bills are never returned to the drawer if paid.

Then there is a consideration which I consider conclusive, seeing that the thing is open to a contract, and the parties have chosen to make none. If under this view of the case the usage is not of itself conclusive, I think the apothecary has the right to retain, to warrant himself, if a question shall arise, as to correctness of conduct.

I may add—the claimant must always show his title—if the title be in equipoise he must fail.

It also occurs to me that this paper is merely a substitute for a verbal direction, and no doubt there are multitudes of verbal orders filled that *might* be written.

On the whole, I should think there ought to be no doubt that the apothecary may, if he sees fit and is foolish enough to run the risk, put the paper in the fire. There can be no half-way measure, he either owns it absolutely, or not at all. There can be no duty to produce it for inspection, or to give copies, while it would be silly to refuse to do so when reasonably demanded.

It is very unusual in this country to look to the consequence of a rule. It may be well to do so. If the patient is the owner, he may at any time within six years demand the paper, and if it is not surrendered sue as for a tortious conversion of his property. If he can't do this he certainly has no title. I would ask if Executors ever inquired for prescriptions given his testator; if they belong to the testator, they are assets. R. C. McMURTRIE.

ON THE PREPARATION OF SUPPOSITORIES.

By H. C. ARCHIBALD, PH.G., M.D.

This subject is one on which pharmacists hold divergent views. Some, especially the old-time class, are wedded to the fusion process; a few who are sufficiently skilled can turn out a tolerably presentable suppository with the spatula and pill-tile. But the vast

majority I have come in contact with in recent years are satisfied that the proper way to make them is by cold compression, and from an experience of over 35 years in the manufacture of this class of remedies, I am satisfied that the time is not far distant when the advantage to be derived from the use of proper machinery for moulding suppositories will be universally acknowledged.

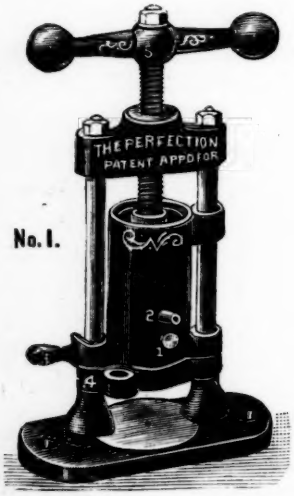
While in the dispensing business the patience was often sorely tried with the suppository prescription. The customer frequently was in a hurry; sometimes the case was urgent, and yet the inevitable ¾ to 1 hour had to pass by before they could be safely sent out in summer, and often a box of cotton was all there was to show by the time it reached the patient when sent by mail.

In the Spring of 1879 I perfected my first machine of 2 moulds, which was described by Mr. E. T. Ellis, in the AMERICAN JOURNAL OF PHARMACY, 1879, p. 184. Afterwards, in 1883, I made a larger and better one of 3 moulds, to which I added urethral and nasal suppositories in 1885. This machine has served an excellent purpose; it has educated thousands to what, in the writer's opinion, is the only correct method of making a suppository—*i. e.*, cold compression. But these machines require a certain amount of adaptability and familiarity with the workings—same as a type-writer, for instance—or the art of spreading a plaster. Now, judging by some of the letters received, one might think many of the writers wished a machine that would work itself, while others desired to make 3 or 6 suppositories, in place of 1 a minute. So I again directed my attention and thought to the subject, and the result is the following suppository machine which will meet all desiderata, and is so simple that the errand boy can work it as well as the proprietor, after the mass is prepared.

The internal structure of the machine is quite simple, and is readily explained by figure No. 2. It consists simply of a cylinder swinging in a frame, in which the die or mould is placed. The mass, previously prepared, is thrown into this cylinder, which at this time is open, as in fig. 2. The cylinder being closed, as in fig. 1, the screw pressure is applied until all resistance is overcome. Before opening the bed-plate at 4, fig. No. 1, the screw should be loosened by half a turn; then throw the bed-plate back, and again gently turn the screw until the suppositories drop out. After securing these, close the plate and proceed in the same manner until the cylinder is

emptied of the mass. The small cylindrical pieces which force the suppositories from the moulds need not be lost; they should be returned to the cylinder at the last working for conversion into suppositories. In removing or changing the moulds screw 1, fig. No. 1, which holds the mould in position, should always be slackened.

In making urethal or nasal suppositories, remove the cap at 2, fig. No. 1, and screw on the small tube, taking care to have the die in the cylinder covered with a brass disc, which is furnished. The mass is then simply put into the cylinder as before, pressure applied, and the suppositories cut into any length desired.



No skill is required to work this machine, which is perfect, reliable and easily manipulated, and for the large amount of service attainable is reasonable in price. It is scarcely necessary to mention that the mass of cacao butter and medicinal ingredients must be properly mixed.

With the small machine, which has 3 moulds of the 15 and 30 grain sizes, from 300 to 500 suppositories can readily be turned out in an hour, and with the larger one about double the number. The simplicity of a contrivance like this, I think, will be generally appreciated by pharmacists as being saving in time, labor and money, and as doing away with the dread, felt by many, of prescriptions for suppositories during the busy hours or at night time.

915 Dickerson Street,
Philadelphia, January, 1891.

GLEANINGS FROM THE GERMAN JOURNALS.

By Frank X. Moerk, Ph.G.

Creolin-Pearson.—A very elaborate analysis of this preparation by M. Pfrenger, can be summarized as follows: Phenols, 12·67; hydrocarbons, 44·94; organic bases, 2·76; sodium, 1·45; resin, 32·45; sulphur, 0·248; chlorine, 0·14; water (by difference), 5·342. The phenols consist of traces of carbolic acid, smaller quantities of *m*-xylenol and *o*-xylenol, in the main of ortho- and meta-cresol. The hydrocarbons are mixtures of small quantities of the higher homologues of benzol (boiling between 160° and 190° C.) with naphthalene *a*-methylnaphthalene, acenaphthene and anthracene. The bases belong largely to the chinoline-group. The emulsifying-property of the preparation is due to the presence of resin-soap.—*Archiv der Pharm.*, 1890, 701–713.

Birch-wood creasote contains the following phenols: Guaiacol and creasol (making up the bulk of the phenols); cresol and xylenol (in smaller quantities); phenol (carbolic acid) was not positively identified.—M. Pfrenger, *Archiv der Pharm.*, 1890, 713–719.

Test for Vanillin.—Vanillin in powder or in alcoholic solution, mixed with a small quantity of thiophene and concentrated sulphuric acid, gives upon addition of alcohol a deep green or blue-green coloration. Wood contains vanillin as an incrustating substance; this may be proven by moistening wood with a mixture containing one or two drops thiophene, 20–30 drops alcohol and an equal volume of concentrated sulphuric acid, after a short time a beautiful green color develops. Of various aromatic substances, vanillin was the only one to produce the above reaction.—Anton Ihl, *Chemiker Ztg.*, 1890, 1707.

The Volatile Alkaloid of Ipecacuanha (Amer. Jour. Pharm., 1889, 78) has been further studied by its discoverer, Dr. E. M. Arndt, establishing its identity with *choline* (trimethyloxethylammonium hydrate, $N(CH_3)_3(C_2H_4.OH)(OH)$). In the estimation of emetine, this volatile body is likely to cause errors; it is known that in preparations of ipecac containing acids more alkaloid is found than in preparations in which no acid was used; this is explained by the emetine being present in the ipecac in a soluble form, while the choline is present in insoluble form, but easily rendered soluble by use of acids.—*Apotheker, Ztg.*, 1890, 780.

Examination of Ipecac.—1. *Qualitative.* A small quantity of the powdered drug is mixed with milk of lime, dried and extracted with chloroform; the chloroformic solution is agitated with acidulated water, the aqueous solution concentrated, mixed with concentrated sulphuric acid and molybdate of ammonium should produce at once a red color changing to green. 2. *Quantitative.* 10 gm. of the powdered ipecac are intimately mixed with 5 gm. sodium carbonate and 1 gm. crystallized ferric chloride, the mixture digested for one hour with 100 gm. 60 per cent. methyl alcohol in a water-bath with inverted condenser; it is then filtered and evaporated to remove the alcohol (at this stage the choline or its decomposition products are volatilized), the residue taken up with 50 cc. very dilute water of ammonia and this mixture agitated with 25 cc. chloroform. The chloroform solution is agitated with slightly acidulated water, and the latter solution titrated with Mayer's reagent (each cc. corresponds to 0·0189 gm. emetine); 5 to 5·5 cc. of the reagent should be necessary for the completion of the reaction, indicating an alkaloidal strength of at least 0·945 per cent. emetine.—Dr. E. M. Arndt, *Apotheker Ztg.*, 1890, 781.

Estimation of mercuric chloride in solutions, pastilles and sublimate gauze.—In the absence of alkaline chlorides, solutions of mercuric chloride containing about one gram in a litre are estimated as follows: 100 cc. are thoroughly agitated with 0·1 to 0·2 gm. magnesium oxide, a few drops of potassium chromate solution added and titrated with $\frac{n}{10}$ solution of silver nitrate. Each. cc. $AgNO_3$ corresponds to 0·01355 gm. mercuric chloride. In solutions containing *alkaline chlorides* or in *pastilles* two determinations are necessary: In one the total chlorine is estimated as above; in the other the solution is evaporated to dryness in a porcelain capsule, then gently heated for some minutes, finally applying a strong heat to volatilize the mercuric chloride; after cooling the residue is dissolved in water, potassium chromate added and the solution titrated with $AgNO_3$. The difference between the two titrations gives the silver nitrate solution corresponding to the mercuric chloride. In *sublimate gauze* the mercuric chloride (and alkaline chloride) is extracted by macerating 50 gms. of the material with 500 cc. water, filtering and using 200 cc. for the total chlorine estimation, also 200 cc. for the alkaline chlorides as just described; the difference will give $AgNO_3$ solution necessary for 20 grams of the material.—Dr. J. Bongartz, *Apotheker Ztg*, 1890, 791.

Detection of resorcin and thymol.—In a test tube are mixed potassium or sodium nitrite, gypsum and sodium bisulphate in approximately equal quantities; these are moistened with water and the solution to be tested added and heat applied. In the presence of thymol the mixture becomes chrome-red in color; in the presence of resorcin chrome-green, while in the upper part of the tube are to be noticed bright-red drops. The mixtures must preserve their acid reactions. These tests are very delicate and permanent for considerable time. Attention is also called to the pleasant fruity odor of the thymol-nitrite.—H. Bornträger (*Ztschr. f. analyt. Chemie*) *Pharm. Ztg.*, 1890, 768.

Sulphaldehyde C_2H_4S, obtained by the action of hydrogen sulphide upon acetaldehyde, forms an oily liquid of disagreeable odor, solidifying at —8° C., melting again at —2° C. Treatment with acids polymerizes the preparation, a solid trisulphaldehyde (or thioparaldehyde) of the formula $(C_2H_4S)_3$ resulting. Some of the obtainable commercial preparations are mixtures of aldehyde and thioparaldehyde (Trommsdorff) boiling at 45–50° C. It is more energetic than paraldehyde, although its action at first is slower, owing to its insolubility.—*Pharm. Ztg.*, 1890, 761.

Antipyrine; new method of preparation.—According to Dr. Knorr's patent, antipyrine is made by the condensation of ethylic aceto-acetate and phenylhydrazine and methylating the condensation product. C. F. Böhringer & Son have patented a process in which β-halogenbutyric acid or its ethers are condensed with phenylhydrazine, the resulting methyl-phenylpyrazine changed by weak oxidizing agents, like mercuric oxide, into dehydromethyl-phenylhydrazine which finally, by methylating, is converted into dehydrodimethyl-phenylhydrazine=dimethylphenylpyrazolon or antipyrine. The preparation crystallizes from toluol in beautiful plates, which have the melting point 113° C., are easily soluble in water and alcohol; in dilute, acidulated solutions, sodium nitrite produces a beautiful emerald green color. These reactions would indicate the identity of the two preparations.—(*Südd. Apoth. Ztg.*) *Pharm. Ztg.* 1890, 784.

Ceratum flavum salicylatum.—2·0 powdered salicylic acid are triturated with 5·0 expressed oil of almonds and added to a melted cerate consisting of 62·0 expressed oil of almonds and 31·0 yellow wax; heat is applied until the salicylic acid dissolves, then the

cerate is allowed to cool somewhat and 0·5 each of the oils of lemon and bergamot incorporated and poured into proper moulds.—Scheerer, *Oester. Ztschr. f. Pharm.*, 1890, 631.

Pine-spirit or Pine-vapor, used as a spray in purifying the atmosphere of rooms, is made as follows: 70·0 oil of pinus sylvestris, 8·0 oil of juniper berries, 5·0 oil of rosemary, 2·0 each of the oils of lavender and lemon, 1·0 oil of bergamot and 1000·0 alcohol are allowed to stand in a moderately warm place for several days, filtered and then bottled. A more pleasant aroma is obtainable if to the above be added 200·0 pine twigs and 500·0 additional alcohol and distilling after allowing to stand for a few days.—Scheerer, *Oester. Ztschr. f. Pharm.*, 1890, 632.

Arsenic in commercial acids.—G. Buchner calls attention to the fact that commercial hydrochloric and sulphuric acids at present contain large quantities of arsenic. An examination of a sample of sulphuric acid disclosed the presence of 131 grams As_2O_3 in 100 kilograms of the acid; in a sample of hydrochloric acid 592 grams As_2O_3 were found for 100 kilograms. 50 grams of the sulphuric acid and 10 grams of the hydrochloric acid contain a lethal dose of arsenious oxide.—*Chemiker Ztg.*, 1891, 13.

Ferricyanide of potassium.—Dr. G. Kassner publishes a new method for the preparation of this valuable chemical which allows of a cheaper production, and therefore more extended use. By heating calcium plumbate and potassium ferrocyanide together and passing CO_2 over the heated mass the following reaction takes place: $Ca_2PbO_4 + 2K_4Fe(CN)_6 + 4CO_2 = K_6Fe_2(CN)_{12} + K_2CO_3 + 2CaCO_3 + PbCO_3$. Treating the mass with water dissolves the ferricyanide and carbonate of potassium, the former crystallizing after concentrating the solution, the latter remaining in the mother-liquor; the insoluble portion consists of the carbonates of lead and calcium, which can be used in regenerating the calcium plumbate.—(*Oester. Chem. u. Techn. Ztg.*) *Chem.-techn. Central-Anz.*, 1890, 511.

Alkaloidal assay of narcotic extracts.—2 gm. extract are dissolved in 8 cc. water, 2 cc. water of ammonia added, thoroughly agitated with 40 cc. of a mixture composed of 15 cc. chloroform and 25 cc. ether, and set aside. (This mixture of chloroform and ether is lighter than the extract solution; by taking 20 cc. chloroform and 20 cc. ether a solvent is obtained which is heavier than the extract solution; these mixtures are recommended because no emulsions are formed by

agitating with the solution of the extract.) After half an hour 20 cc. of the solvent are removed and allowed to evaporate; the residue is dissolved in *very little alcohol*, 5 or 6 drops of cochineal tincture added and the alkaloid titrated with $\frac{n}{100}$ hydrochloric acid. Each cc. of the $\frac{n}{100}$ acid corresponds to atropine 0·00289; hyosciamine, 0·00289; strychnine, 0·00334; strychnos alkaloids (strychnine + brucine) 0·00364. The method is applicable to the assay of extracts, fluid extracts and tinctures (after 20 cc. have been evaporated to 10 cc.); it is claimed that an assay can be made in one hour or in even less time.—O. Schweissinger and G. Sarnow, *Pharm. Centralhalle*, 1890, 771–775.

The Alkaloids of Delphinium Staphisagria have been studied by Ch. Kara-Stojanow (*Phar. Ztschr. f. Russl.*, 1890). By slow evaporation of the ethereal solution of the crude alkaloids, *delphinine* separates in beautiful crystals, next *delphisine*, and *delphinoidine* remains in the mother liquor. Delphinine forms colorless rhombic crystals, melting at 191·8° C.; has the formula $C_{31}H_{47}NO_7$; does *not* give any color reactions; the nitrate and sulphate form microscopic crystals, all other salts are amorphous. Delphisine, after purification, forms small needle-like crystals, having the formula $C_{31}H_{50}NO_7$, which is to be confirmed; it is readily soluble in chloroform and gives no color reactions. Delphinoidine is obtained from the syrupy liquor by precipitating with petroleum ether; it has the formula $C_{25}H_{42}NO_4$, forms amorphous salts, and is dissolved by sulphuric or phosphoric acids with a brownish color, the solution having an emerald green fluorescence. In addition to these, four amorphous alkaloids were obtained from the alkaline solution which had been exhausted with ether, by agitation with benzol, then with chloroform; the benzol solution, as well as the chloroform solution, after addition of petroleum ether, gave amorphous precipitates, while the solutions on evaporation left amorphous residues; the quantities were too small to make very thorough studies.

ABSTRACTS FROM THE FRENCH JOURNALS.

TRANSLATED FOR THE AMERICAN JOURNAL OF PHARMACY.

PREPARATION OF GLUCOSIDES.—(1) The decoction of the plant may be boiled (to one-half) with litharge, filtered and concentrated into a thick syrup. But this method does not always give good results, as the long exposure to the air while boiling may give rise

to products of decomposition. (2) Having defecated a decoction of the plant by neutral acetate of lead and filtering, the glucoside may be precipitated by sub-acetate of lead, in the form of a plumbic compound; and may be isolated by diffusing the precipitate in distilled water, or preferably in alcohol, passing a current of sulphuretted hydrogen, boiling, filtering and concentrating rapidly *in vacuo*. Another method is to digest the precipitate with water, and add diluted sulphuric acid in just sufficient quantity to precipitate the lead; then proceed as before. (3) When a free glucoside exists in a plant nearly free from tannin, the plant may be digested with alcohol; filter, evaporate the alcohol and crystallize. This is the method with *strophanthin* and *ouabain*. (4) The "lime process," recommended by Tanret consists in treating the pulverized plant with milk of lime for 24 hours, when the mass is put into a displacement apparatus. The glucoside may now be precipitated by a reagent, coagulated by ebullition, or taken up by an appropriate solvent. This method is used for *vincetoxin* and *condurangin*. (5) When the plant contains much tannin, or when the production of sulphuretted hydrogen is to be avoided, precipitate the decoction by sub-acetate of lead, mix the precipitate with slacked lime and dry it in a water-bath; the powder, introduced into a displacement apparatus, is treated by alcohol, whose evaporation reveals the glucoside. *Pambotanin* has been made in this way. Concerning solvents, I may say that, whilst the alkaloids require such substances as benzin, ether, chloroform, etc., the glucosides dissolve only [? editor] in alcohol and water. Some of the latter have a remarkable affinity for water. Under the action of weak mineral acids the glucosides decompose and form new bodies. The object of this paper is to put young chemists upon their guard against the errors resulting from the use of certain reagents, such as picric acid, iodide of potassium and mercury, and tannin, said to give characteristic results with the alkaloids, as they likewise precipitate a certain number of the glucosides.—M. Bocquillon-Limousin, *Répert. de Phar.*, Nov. 10, 1890.

CHARACTERS OF GLUCOSIDES.—Certain glucosides, such as amygdalin and solanine, contain nitrogen. Many others, such as æsculin and arbutin, are tertiary combinations. Some of them, like caincin have a distinctly acid reaction. Others are basic, and, like the alkaloids, are precipitated by potash; Tanret's vincetoxin

affords an example of this kind. Hence, we see that Kobert was in error when he stated that when the decoction of a plant gave acid reactions, the presence of a glucoside was demonstrated. Some of the glucosides may be precipitated with picric acid; others do not show this reaction. Some of them, like vincetoxin, coagulate under the influence of heat. Most of the aqueous solutions of the glucosides, like those of saponin, are persistently frothy. There remain but two characteristic reactions: (1) Decomposition by mineral acids and reduction by Fehling's liquor after such decomposition: (2) Precipitation by a solution of molybdate of ammonium, lightly acidulated with hydrochloric acid.—M. Bocquillon-Limousin, in the *Répert. de Phar.*, Nov. 10, 1890.

Active Principle of Bread-Crumb.—M. Barnouvin writes to the *Répert. de Phar.*, Dec. 10, that although pharmacologists tell us the reason why we use bread-crumb in making Sydenham's White Decoction, viz., that it contains an acid substance, they do not tell us what the substance is. After trying, in vain, various solvents, the author subjected the product of a decoction of bread-crumb to Uffelmann's reagent (phenol and perchloride of iron) and obtained the characteristic yellow coloration of lactic acid. M. Barnouvin considers this fact as having a certain amount of interest on account of Dr. Hayem's recent statements concerning the use of lactic acid in the treatment of green diarrhœa in children. He thinks that the good effects of Sydenham's decoction may be due to the presence of lactic acid in the bread-crumb used in its preparation.

Antiseptic Power of Salol.—At the November meeting of the Paris Society of Pharmacy, a note from M. Lacroix was read, in which the author described his researches on the antiseptic properties of salol. His conclusions are that the products of the decomposition of salol have this power, and that it is impossible to develop the pyogenic bacillus in the urine of persons who had ingested this substance. Such urine, placed in sterilized tubes with the bacillus, and subjected to heat for three days, underwent no change.—*Répert. de Phar.*, Dec. 10, 1890.

Analysis of a Specific for Gout.—At the same meeting M. Barillé presented the qualitative results of his analysis of a popular remedy for gouty troubles. He found the mixture to contain iodide of potassium, benzoate of sodium, tincture of squill, tincture

of vanilla and essence of wintergreen. M. Ferrand remarked that the wintergreen present could not have been derived from *gaultheria procumbens*. M. Martindale observed that it was extracted from *betula lenta*.

SOLUBILITY OF BETA-NAPHTHOL WITH BORIC ACID. — At the November meeting of the Paris Society of Biology, M. Anotta reported that while beta-naphthol has a solubility of only 20 cgm. per 1,000 in pure water, it will dissolve in the proportion of 70 to 80 cgm. per 1,000 in water saturated with boric acid. The presence of naphthol in a boric acid solution adds sensibly to its antiseptic power.—*Répert. de Phar.*, Dec. 10, 1890.

EXAMINATION OF SUB-NITRATES OF BISMUTH.—M. Schulzé found that the various samples examined, contained sub-carbonate, sub-chloride and free hydrate of bismuth, and free water. In seven sealed samples from as many manufacturers, the amount of water averaged 23 per 1,000; the amount of sub-carbonate of bismuth present was 203 per 1,000. In five samples, the average amount of sub-chloride was 42 per 1,000. The amount of carbonic acid present was ascertained by the use of Yvon's ureometer. The chlorine was measured by Volhard's method, in which the sub-nitrate is dissolved in a nitric acid liquor, leaving the chlorine. To find the amount of nitric acid present, the author used Eder's process, which he considers the best. He does not describe it except to say that it requires the use of Kipp's carbonic acid apparatus.—*Répert. de Phar.*, Dec., 1890.

PILULA FERRI PROTOCHLORIDI.[1]

BY JAMES B. MCLAREN.

Prescriptions for pills of protochloride of iron have been pretty common of late. Usually the excipient is left to the discretion of the dispenser, but in several instances recently I have seen anhydrous lanolin prescribed for this purpose.

Probably this excipient has been suggested by the paper read before this Association by Mr. Millar, in which he recommended lanolin as an excipient for potassium permanganate pills and other similar substances.

[1] Read before the Edinburgh Chemists' Assistants' Association; reprinted from *Phar. Jour. and Trans.*, Dec. 20, 1890, p. 553.

I made a set of pills with anhydrous protochloride of iron and anhydrous lanolin, and kept them under observation. They were rolled in liquorice powder. When first made the pills were fairly hard and looked quite satisfactory. In the course of a few days, however, they became quite moist and very unsightly externally, at the same time assuming an olive-brown color. If the pill be cut in two, it is seen that internally the mass is still unchanged, but the softening gradually penetrates deeper into the mass till the whole becomes quite pasty in consistence.

I made a second set of pills and coated them well with sandarach varnish, but this appeared to have little effect in preventing the change.

As the result of some experiments I would suggest that these pills should be made with some absorbent powder, such as liquorice or althæa, and beat into a mass with a small quantity of some inert extract. The following formula, I find, does very well:

Anhydrous protochloride of iron,	3 grains.
Powdered liquorice,	1 grain.
Extract of liquorice,	1 grain.

Mix to make one pill.

The only objection to this method is the size of the pill, but this is counterbalanced by its better keeping properties.

TABLE OF ATOMIC WEIGHTS.

(Issued December 6, 1890.)

By request of the Committee of Revision and Publication of the Pharmacopœia of the United States of America, Prof. F. W. Clarke, Chief Chemist of the United States Geological Survey, has furnished a Table of Atomic Weights, revised upon the basis of the most recent data, and his latest computations. The Committee has resolved that this table be printed and furnished for publication to the professional press. The Committee also requests that all calculations and analytical data which are to be given in reports or contributions intended for its use or cognizance, be based upon the values in the table. It would be highly desirable that this table be adopted and uniformly followed by chemists in general, at least for practical purposes, until it is superseded by a revised edition. It would only be necessary for any author of a paper, etc., to state that his analytical figures are based upon "Prof. Clarke's Table

of Atomic Weights, of December 6, 1890," or some subsequent issue.

This table represents the latest and most trustworthy results, reduced to a uniform basis of comparison, with oxygen = 16 as starting point of the system. No decimal places representing large uncertainties are used. When values vary, with equal probability on both sides, so far as our present knowledge goes, as in the case of cadmium (111·8 and 112·2), the mean value is given in the table.

The names of elements occurring in pharmaceutical, medicinal, chemicals, are printed in talics :

Name.	Symbol.	Atomic weight.	Name.	Symbol.	Atomic weight.
Aluminum, . . .	*Al*	*27·*	*Molybdenum*, . .	*Mo*	*96·*
Antimony, . . .	*Sb*	*120·*	Nickel, ...	Ni	58·7
Arsenic, ...	*As*	*75·*	*Nitrogen*, . . .	*N*	*14·03*
Barium, ...	*Ba*	*137·*	Osmium, . . .	Os	191·7
Bismuth, ...	*Bi*	*208·9*	*Oxygen*[4], . .	*O*	*16·*
Boron, ...	*B*	*11·*	Palladium, . . .	Pd	106·6
Bromine, ...	*Br*	*79·95*	*Phosphorus*, . .	*P*	*31·*
Cadmium, ...	Cd	112·	Platinum, . . .	Pt	195·
Caesium, ...	Cs	132·9	*Potassium*, . . .	*K*	*39·11*
Calcium, ...	*Ca*	*40·*	Rhodium, . . .	Rh	103·5
Carbon, ...	*C*	*12·*	Rubidium, . . .	Rb	85·5
Cerium, ...	*Ce*	*140·2*	Ruthenium, . .	Ru	101·6
Chlorine, ...	*Cl*	*35·45*	Samarium, . . .	Sm	150·
Chromium, . . .	*Cr*	*52·1*	Scandium, . . .	Sc	44·
Cobalt, ...	Co	59·	Selenium, . . .	Se	79·
Columbium[1], . .	Cb	94·	*Silicon*, ...	*Si*	*28·4*
Copper, ...	*Cu*	*63·4*	*Silver*, ...	*Ag*	*107·92*
Didymium[2], . .	Di	142·3	*Sodium*, ...	*Na*	*23·05*
Erbium, ...	Er	166·3	Strontium, . . .	Sr	87·6
Fluorine, ...	F	19·	*Sulphur*, ...	*S*	*32·06*
Gallium, ...	Ga	69·	Tantalum, . . .	Ta	182·6
Germanium, . . .	Ge	72·3	Tellurium, . . .	Te	125·
Glucinum[3], . . .	Gl	9·	Terbium, ...	Tb	159·5
Gold, ...	*Au*	*197·3*	Thallium, . . .	Tl	204·18
Hydrogen, . . .	*H*	*1·007*	Thorium, ...	Th	232·6
Iudium, ...	In	113·7	Tin, ...	Sn	119·
Iodine.	*I*	*126·85*	Titanium, . . .	Ti	48·
Iridium, ...	Ir	193·1	Tungsten, . . .	W	184·
Iron, ...	*Fe*	*56·*	Uranium, ...	U	239·6
Lanthanum, . . .	La	138·2	Vanadium, . . .	V	51·4
Lead, ...	*Pb*	*206·95*	Yterbium, . . .	Yb	173·
Lithium, ...	*Li*	*7·02*	Yttrium, ...	Yt	89·1
Magnesium, . . .	*Mg*	*24·3*	*Zinc*, ...	*Zn*	*65·3*
Manganese, . . .	*Mn*	*55·*	Zirconium, . . .	Zr	90·6
Mercury, ...	*Hg*	*200·*			

[1] Has priority over Niobium.
[2] Now split into Neo- and Praseo-Didymium.
[3] Has priority over Beryllium.
[4] Standard, or basis of the system.

PILL COATING.

By D. Hughes Davies.

Although the process of pill coating is not of a very remote date, the demand for coated pills is far greater at present than for the uncoated ones, and I consider that chemists would be doing rightly in giving this subject more attention than it has as yet received.

There may be various objections to having pills coated, but now the age of elegant pharmacy is getting ripe, anything of a nice outward appearance, and not of an unpleasant taste, is of far greater value in the eyes of the public than the old fashioned article, and I think that the remark, "A white cloak covereth a multitude of sins," holds good in this instance.

I am not prepared to state that pill coating is such an easy matter as some have volunteered it to be, but regard the turning out of a pill with a thorough good polish on it, as a difficult task, until the process has been thoroughly mastered, but after that it is comparatively easy to supply the customer with a pill having quite as beautiful a polish as any machinery can turn out. When a batch does not turn out properly and the culprit is taxed, a remark often heard behind the dispensing department is, "Oh! but there's a lot of knack in coating pills, you know," and I may say that there is a lot of truth in that. However, with a little practice everything is overcome. The inability of chemists in some instances where pills are directed in prescriptions to be coated has been the cause of losing good customers. One may try his utmost to explain that the coating has nothing to do with the pill; it is very seldom the customer is enlightened to his own satisfaction.

There are various ways of coating pills, but the first I was ever able to perform was the tolut. and creta gall., which consists in dissolving ʒiij. of residue from making syrup tolut. in ℥iss. of ether, varnish the pills with this solution, and when dry rub over with a little powdered French chalk; there are, however, improvements upon that process which I will try and define.

(1) *The Gelatin Process.*—I will not make any comments upon the many methods of gelatin coating I have tried, but will simply define the one with which I have obtained by far the best results, viz: make the solution from

Gelatin,	1 oz.
Water,	8 ozs.

Dissolve at a gentle heat, then add the white of an egg, and heat until the albumen coagulates, strain through flannel into a water bath kept at a low temperature, add ℥ij. glycerin, ℥ij. S.V.R., and acid. boric. gr. vi.

A beautifully clear solution is thus obtained; the clearer the solution the better the polish. When gelatin coating is carried out on a small scale, it is the usual custom to coat the pills singly, but I have adopted another plan and find it answer equally well and occupy considerably less time.

I have a rounded piece of thin wood with a thick layer of cork stuck round the edge, and in the centre a small hole, through which I have a little ferrule, which enables me to place the concern on a small iron peg fastened in a wooden stand.

The cost of making the whole turn out would amount to about ninepence. It is convenient to have three or four boards at hand; the stand, of course, would be adaptable to any of them. I have the boards with good needles firmly fastened in the cork to the number of six, twelve, twenty-four and forty-eight. Now attach the pills to be coated to the points of the needles and dip in the solution, taking care not to keep them in too long, as a thick coating is undesirable. Place the board with the pills on back on the peg, revolve in a gentle manner to render the coating even, and give it an occasional turn round. By doing the coating in the evening the pills are ready to be taken off the needles and stored away in bottles the next morning.

(2) *Pearl Coating.*—To do this successfully several conditions are of great importance, without attention to which the French chalk will fail to shine. Care must be taken in the selection of a proper excipient for working the mass, for although pills when pearl coated are not within view of the naked eye, they nevertheless must be properly made to be properly coated.

Glycerin being hygroscopic is not an excipient that should be used.

The pills ought to be as nearly round as possible and moderately hard and dry; it is best to keep them exposed on trays for at least a day before the coating is proceeded with. Should the mass be crumbly the condition may be considered to be one of the most bitter enemies of successful coating; the operation will necessarily be a failure, as the pills will most likely crack, and when that takes

place the attempt may be given up. Another difficulty that has to be overcome is with pills containing essential oils. Unless these are varnished previous to the coating the oil will work through and spoil the appearance. It is best to dilute the pill varnish in common use to half strength and allow the pills a day's rest before clothing in white.

I use two covered gallipots and a round tin box in the process. The pots should be perfectly smooth, and have well-fitting lids, and should be large enough to hold double the quantity of pills for coating. The tin corresponds in size to the pots.

Place some French chalk in the tin and the pills in one of the pots, damp with a solution. The one I use is equal parts of mucilago acaciæ, syr. simp. and aqua; too much solution should not be used. A 2 drachm measure is convenient for the purpose. The pills should all be damped, but if too much solution be used too much chalk is taken up. Now turn them out of the pot into the tin containing the chalk, shake sharply and empty out on to a proper receptacle (I use the lid of a card-board box), keep moving and separate the loose chalk. They are now ready for the polishing pot, being the second gallipot, which should be kept as polisher only.

Repeat the operation, but this time removing as much of the loose chalk as possible before using the polisher, never forgetting that these small things are the tedious puzzles of pill coating. Repeat the operation once again and it is complete. It is necessary to give particular attention to the washing of the pots between each course, and to keep the polisher perfectly dry. I generally after washing and wiping the pot hold it over a spirit lamp and polish out with a soft cloth.

With close attention to the preceding remarks pill coating can be mastered after a few experiments.

I had intended to dwell upon sugar and keratine coating but will not at present trespass on the valuable space of the journal, but sincerely trust that these few lines may act as a stimulus for further papers in this direction, viz: the practical part of the trade.—*Phar. Jour. and Trans.*, Jan. 10, p. 597.

Injections of pyoktanin were observed by Dr. Lindstrœm to cause a diminution of gonorrhœal secretion, without, however, lessening the pain. The strength of the solution varied from 1 to 4 parts of pyoktanin in 1,000 parts.

A CHEMICAL PROBLEM.[1]

By W. Lloyd Williams, A.I.C.

In September of the present year a friend wrote me as follows:

℞	Ammonii chlorid.,	℥j.
	Sodii bibor.,	℥ij.
	Sodii bicarb.,	℥ij.
	Acid carbolici,	24 grs.
	Aquæ,	ad ℨ vj.

The above is the form for a lotion which always goes black on being kept, even when put in a glass-stoppered bottle. Can you explain it?

The reply to this query forms the subject matter of this short note.

It has probably been noticed by each one present that when solutions of salicylate of sodium and an alkaline bicarbonate are mixed and kept for some time a blackening occurs, and reasoning by the letter of the inquiry and the light of experience I conjectured that the coloration might be traced to some action of the sodium bicarbonate upon the phenol. To test the value of this conjecture I made up the lotion according to the prescription and watched its behavior.

I was speedily undeceived; in the course of some four and twenty hours a distinct change was perceptible, but the direction of the change was not in accordance with the symptoms exhibited by the salicylate mixture.

The tint gradually assumed by the lotion is of a bluish-purple color, that of the salicylate mixture proceeds through yellow and brown to inky black.

Besides, it is stated that there is no reaction between alkaline carbonates and phenol, and I find no coloration attends an admixture of sodium bicarbonate and phenol, nor yet of borax and phenol.

I next put together the borax, soda, phenol and water. Beyond the development of a faint yellow tint no change was observed. The passage of a considerable volume of air did not intensify the

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[1] Read before the Chemists' Assistants' Association; reprinted from *Phar. Jour. and Trans.*, January 3, p. 592.

tint, and no change in color attended the passage of carbon dioxide through a solution of borax and phenol, whence I concluded that CO_2 was in no way answerable for the phenomenon.

Having to a certain extent disposed of the soda salts, I felt free to introduce the chloride of ammonium, and my next step was to make a solution containing that compound, bicarbonate of sodium and phenol. No change was noticeable here for a fortnight, but at the expiration of that time a faint difference in tint could be detected and it has gradually increased in intensity. Meanwhile, I was pursuing my inquiry, and amongst other things I tried the effect of passing free ammonia into an aqueous solution of phenol. Here I observed the change in color which I was seeking; the solution commenced to darken two days after I had conducted the experiment, and behaved in a fashion corresponding with the development of color in the original prescription. I repeated the experiment and kept the solution in the dark; the only difference was that the coloration was slightly retarded.

I had now arrived within measurable distance of an explanation of the phenomenon, the coloration is caused by the action of free ammonia upon the phenol.

The origin of the ammonia is sufficiently obvious. We all know that it is set free from its salts by the action of an alkali, and sodium bicarbonate and borax, I need hardly remind you, are both alkaline.

I had not anticipated that ammonia would be more freely developed by the action of borax upon sal-ammoniac, than by the action of sodium bicarbonate upon that salt, but the ammoniacal odor is much more marked, and the action upon phenol is more prompt in the former than in the latter case.

In conclusion, I formulate the proposition that the darkening in color is due to the action upon phenol of the ammonia liberated from the ammonium chloride by the joint action of borax and sodium carbonate.

One word as to the color. It is not black. It appears black after long standing when viewed by reflected light, but by transmitted light the bluish-purple tint is readily seen.

The mechanical part of these experiments was carried out for me by Mr. A. Gunn, in the experimental laboratory at Galen Works, New Cross.

MINUTES OF THE PHARMACEUTICAL MEETING.

JANUARY 20, 1891.

The President being absent, Mr. W. McIntyre was called to the Chair. The minutes of the last meeting were read, and no corrections being required, they were approved.

After the introduction of strangers, donations to the library and cabinet were received, as follows:

Year-Book of Pharmacy for 1890; just received from the British Pharmaceutical Conference; it is similar to the Proceedings of the American Pharmaceutical Association, containing the report on the progress of Pharmacy.

Ten specimens of iron ores, presented on behalf of Mr. Wayland P. Young.

The fruit of Schinus Molle, by Professor Maisch from Professor Herrera; it is known as Arbol del Peru in Mexico, and is cultivated in California and Texas as an ornamental tree, called *pepper tree*, all parts of the plant partaking of a peppery character.

The Committee appointed under the resolution, passed at the last pharmaceutical meeting, consists of Geo. M. Beringer, Prof. H. Trimble, Dr. C. B. Lowe, Jos. W. England and Wm. McIntyre, and had issued a circular to the members, alumni and students of the College, and to the pharmacists of this and neighboring cities, calling attention to the objects of these pharmaceutical meetings.

Professor Maisch read a paper upon *Solanum carolinense*, by Mr. G. A. Krauss, of Memphis, Tenn., as a continuation of the one on the same subject, read at the November meeting.

Mr. Beringer read a paper upon *Bromoform*, alluding to its use in whooping-cough and discussing some of the difficulties of preparing it.

Prof. Remington said that from the results reported the method of purifying by freezing appeared to have been successful.

Mr. J. W. England read a paper on the *ownership of the prescription*.

Dr. Lowe referred to instances in which unpleasant consequences and results entirely different from those expected had occurred, and the physician had stated that the prescription was improperly compounded, when examination showed that it was properly prepared. He declined always to compound a prescription unless he could retain the original.

Mr. Boring said that if a person asked for the prescription it was best to give it, for the more you objected the more valuable would it be considered, and to refuse was generally to lose a customer. Prof. Maisch stated that in most countries of Europe it was the custom sanctioned by law that the prescription must be returned with the medicine if this had been paid for. Prof. Remington said he thought the doctor did not own the prescription, since he had been paid for it; the apothecary did not, as he had not paid anything for it at all, and that the patient had paid for it and it was his; but that by courtesy of the owner the apothecary is the trusted custodian of the prescription, and the less that the question of ownership is discussed the better for the apothecary. Dr. Kaye stated that in his opinion pharmacy was the handmaid of the physician and that the prescription was only an order on a pharmacist to prepare for some one a certain remedy as the doctor might direct, and that order should only be yielded up by his direction.

Prof. Maisch said that it was strange that a subject, which had so long been in contention in this country, should never have been regulated by legal enactment, or tested by direct action in court. Dr. Weidemann said his practice was to give the original prescription if it was insisted on. The Secretary stated that the late Hon. Wm. A. Porter said it was the duty of the apothecary to hold it, it was his only security in case trouble should arise in relation to the compounding of it.

Mr. McIntyre stated that Prof. Maisch, years ago, said that physicians far more frequently gave verbal than written orders for the renewal of prescriptions; that when a physician ordered in writing, that a prescription should not be repeated, he would not repeat it, but if it was printed on the blank that the prescription should not be repeated he paid no attention to the notice, in case the patient applying for the renewal, stated that it had been ordered by the physician verbally.

Mr. Moerk read a paper supplementary to the one read at the November meeting, on the effects of *mercurous salts upon the detection of silver* with the customary tests.

Dr. Archibald exhibited a new *suppository mould*, so arranged that beautiful suppositories can be readily prepared by compression, the manipulation of the apparatus not requiring any skill.

A query was propounded whether *Carron oil* should be prepared by means of Linseed or Cotton-seed oil; several replied immediately that Linseed oil gave the better results.

Questions relating to the composition of *Whitworth's liniment*, also called *Red Bottle*, and to *Aristol*, were referred, the former to Mr. McIntyre, and the latter to Mr. Beringer.

In answer to a question, what was meant in a prescription calling for *Bimuriate of Quinine*, reply was made that probably bimuriate of quinine and urea was the salt intended.

Mr. Webb said he had been greatly interested in the meeting, which was more than ordinarily instructive, and felt glad to see so many more present.

On motion adjourned.

T. S. WIEGAND,
Registrar.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

An Illustrated Encyclopædic Medical Dictionary, being a dictionary of the technical terms used by writers on medicine, and the collateral sciences in the Latin, English, French and German languages. By Frank P. Foster, M.D., editor of the New York Medical Journal, with the collaboration of Wm. C. Ayres, M.D., Edward B. Bronson, M.D., Chas. Stedman Bull, M.D., Henry C. Coe, M.D., Andrew F. Currier, M.D., Alex. Duane, M.D., Simon H. Gage, M.D., Henry J. Garrigues, M.D., Chas. B. Kelsey, M.D., Russell H. Nevins, M.D., Burt G. Wilder, M.D. Vol. II, New York: D. Appleton & Co. 1890. 4to., pp. 753 to 1534.

This stately quarto volume of about 800 pages, printed in double column, commences with the word *cacothanasia*, and closes with *fasay*, thus embracing about three letters of the alphabet. While the encyclopædic character of the work may, to some extent, be assumed from the fact mentioned, it is only on

careful examination of the contents that the immense amount of labor bestowed upon the collection, and the critical sifting of facts can be appreciated. In the first place it must be stated that the work is not limited to the four languages mentioned upon the title page, but the Italian and Spanish synonyms are generally given. The etymological derivations from the Greek or other languages are indicated, and the vernacular names of plants, drugs and medicines have been arranged in their alphabetical order. The cross references are so numerous and appear to have been so systematically carried out that it will be practically impossible to turn to the dictionary without finding the information sought for, either directly under the heading consulted, or by reference to some other heading. The scope is indicated by the statement that not only the terms used in medicine are to be considered, but also those of the collateral sciences, and this object is quite liberally interpreted. Thus, for instance, in the case of the generic name of a medicinal plant the derivation of the word is given, a brief explanation of the botanical characteristics or relations of the genus, the synonyms in the different languages, and then, in alphabetical order, the names of the different species employed medicinally in different parts of the world with notes of their habitat, and properties, and of the drugs and pharmacopœial preparations, in case the drug is, or was formerly recognized by the Pharmacopœias. Since the synonyms, botanical and pharmaceutical, are also fully considered, it is evident that the information given under one title is quite comprehensive. Referring to a case in point, we turn to the word china (cinchona) where we find the Pharmacopœial and commercial names of the different varieties of cinchona bark, now or formerly in use on the continent of Europe; the German names of the cinchona trees, the medicinal preparations of the bark used in Europe, the different varieties of china root (smilax), etc., the whole occupying six columns. Information of a similar character, but necessarily more extensive, is met with under the title of cinchona which fills eleven columns. Medicinal chemicals, their derivatives and allied compounds, zoölogical and mineralogical terms, and, as a matter of course, the technical terms of medicine and surgery receive analogous treatment.

It will be seen from the foregoing that the work before us is, indeed, encyclopædic in character, and from careful examination of the contents, we find the information correct and reliable. One curious typographical error, which occurs on page 968, has escaped the scrutiny of the proof-reader; one of the German synonyms for chimaphila is rendered "hornhaut" instead of "harnkraut." The former is the German for cornea, and is correctly given in the latter place. A number of illustrations have been added, and serve to render descriptions, etc., clearer. Owing to the necessarily reduced size, the figures of a few plants are less satisfactory in this respect. The clearness of the types and the entire typographical arrangement are very inviting; they are in keeping with the amount and quality of the labor expended upon the work by the editor and his co-laborers.

A Standard Dictionary of the English Language. New York: Funk & Wagnalls, publishers.

We have received advance sheets of this work, which will soon be published, forming a quarto volume of over 2,100 pages. When complete, it is stated that

it will contain about 50,000 vocabulary words more than in other dictionaries, and that no new word is admitted until it has been passed upon by well-known philologists. But aside from this feature there are several others which are of especial usefulness. In indicating the pronunciation, use is made of what is known as the scientific alphabet of the American Philological Association, and in the case of disputed pronunciation, those preferred by other authorities are likewise given. The definitions are arranged in such a manner that the most important one, now in use, is placed first and is followed by others, including obsolescent and obsolete ones. When such definitions are followed by quotations, the author is not merely quoted, but also the book and page are given. The addition of synonyms and antonyms will doubtless prove of good service. In fact, the plan appears to have been well conceived and matured for a work aiming high, and for which, in the various departments, the services of contributors of established reputation have been secured. The list price of the dictionary when issued will be $10, but a discount will be allowed to advance subscribers.

Year-Book of Pharmacy, comprising abstracts of papers relating to pharmacy, materia medica and chemistry, contributed to British and foreign journals from July 1, 1889, to June 30, 1890, with the transactions of the British Pharmaceutical Conference at the twenty-seventh annual meeting, held at Leeds, September, 1890. London: J. & A. Churchill, 1890. 8vo. Pp. 551.

Proceedings of the American Pharmaceutical Association at the thirty-eighth annual meeting held at Old Point Comfort, Va., September, 1890. Also the constitution, by-laws and roll of members. Philadelphia: Published by the American Pharmaceutical Association. 8vo. Pp. xxiv and 840.

Reports of the meetings of the two associations were published in our October number of last year. The meetings were held during the two first weeks of September, and the annual publications are now ready, that of the British Conference having been issued during the first half of January, while that of the American Association will be distributed February 3. Aside from the minutes and the papers read, most of which have been republished, either entire or in abstract, in various pharmaceutical journals, the abstracts of papers relating to pharmacy and allied sciences, called by the one publication the "The Year-Book of Pharmacy," and by the other the "Report on the Progress of Pharmacy," are prominent features of both volumes, and for reference to the pharmaceutical literature of the past year will retain their value permanently. The British volume is accompanied by a portrait group, produced by the Meisenbach process, of the officers of the Conference in 1889, and is adapted as a frontispiece to the volume for that year. The American volume contains as frontispiece the portrait of Professor Painter, who died a year ago, while President of the Association.

Report of the Proceedings to the Illinois Pharmaceutical Association at its tenth annual meeting, held at Quincy, August 13, 14 and 15, 1889, and at its eleventh annual meeting, held at Kankakee, August 12, 13 and 14, 1890. 8vo. Pp. 251.

Brief reports of the proceedings at the two meetings were published in the October numbers of our two preceding volumes.

OBITUARY.

Henry Bowman Brady died at Bournemouth, England, January 10, in the fifty-sixth year of his age. He was the son of Henry Brady, surgeon, of Gateshead-upon-Tyne, was educated at schools of the Society of Friends, became an apprentice in pharmacy in 1850 at Leeds, and in 1855 started in business for himself in Newcastle-on-Tyne, laying the foundation for the firm of Brady & Martin, from which he retired in 1876. Mr. Brady was, for many years, a member of the Council and of the Board of Examiners of the Pharmaceutical Society of Great Britain, and was one of the founders and original members of the British Pharmaceutical Conference, holding the office of Treasurer from 1864 to 1870, and of President in 1872 and 1873. Prominent among his contributions to pharmaceutical literature are the papers on microscopical research in pharmacy, and on the micro-chemical examination of extract of flesh, which he and the late Henry Deane presented to the Conference during the years 1864, '65 and '66. His chief scientific work was a report on Foramiferæ forming Part XXII of the zoölogical reports on the scientific results of the voyage of H. M. S. Challenger which was officially indicated in 1884 as being "the largest section which has been published up to the present time." During his travels in various countries of the different continents, Mr. Brady visited North America several times, and in 1871 was present at the meeting of the American Pharmaceutical Association at St. Louis, then presenting from his friend, the late Daniel Hanbury, a very interesting historical paper "on the exports of Virginia, A.D. 1610." The deceased was honored by receiving from the University of Aberdeen the degree of LL.D. in 1888, and by being placed upon the roll of honorary members by many scientific societies, among them by the American Pharmaceutical Association and by the Philadelphia College of Pharmacy.

Notice of the decease of the following graduates of the Philadelphia College of Pharmacy has been received:

Ella Amerman, class 1888, died January 11, in Philadelphia, where she had been under medical treatment for several months. She was born at Danville, Pa., November 27, 1860. After graduation she opened a pharmacy in Scranton, and was quite successful in business until compelled to relinquish it in the fall of last year, owing to her impaired health.

William G. Baker, class 1842, died at Lancaster, Pa., December 28 last. He learned the business in Philadelphia, and for the last 45 years was engaged in the drug business in Lancaster.

Samuel Levin Dilks, class 1868, died January 15, of Bright's disease. He had been in business for several years at Sixth and Pine Streets, in Philadelphia.

J. Estell Evans died at Bridgeton, N. J., January 4, aged 51 years. For a number of years he was in the employ of Wm. R. Warner & Co.

Anthony J. Olmstead, class 1835, died in Morristown, N. J., January 30, 1888. After graduation he carried on a wholesale business in drugs and dyestuffs, from which he retired in 1856, devoting the remainder of his life to agriculture, horticulture and to natural history.